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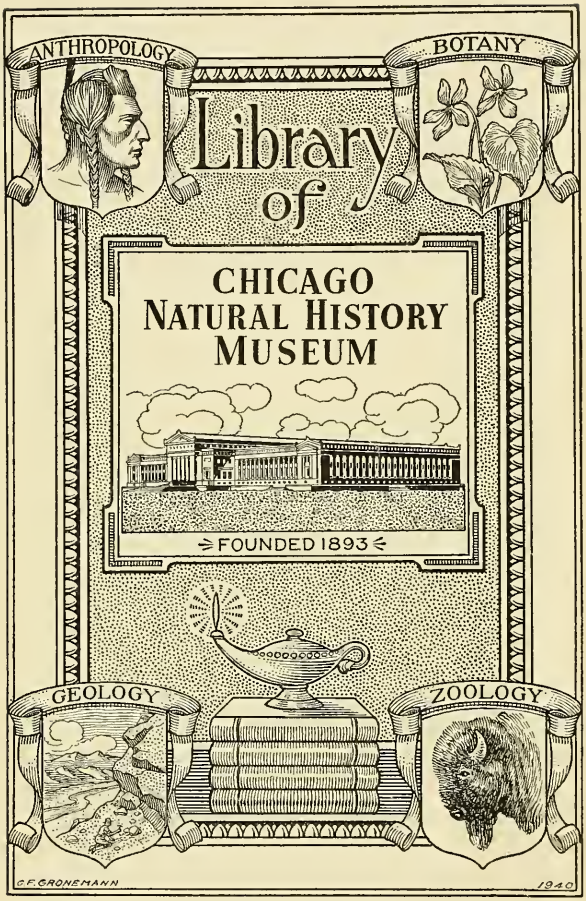

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	5, 6.	,, *Phœa*, Hew.
	7, 8.	,, *Peruda*, Hew.
II.	9, 10.	,, *Plotina*, Hew.
	11, 12.	,, *Pylas*, Hew.
	13, 14.	,, *Peucestas*, Hew.
	15, 16.	,, *Pallantis*, Hew.
III.	17.	,, *Physcoa*, Hew.
	18.	,, *Phanias*, Hew.
	19.	,, *Poesia*, Hew.
	20, 21.	,, *Pisonia*, Hew.
	22.	,, *Panyasis*, Hew.
	23.	,, *Piletha*, Hew.
	24.	,, *Prytanis*, Hew.
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2. *Caulonomus rhyzophagoides*, Woll.; and details.
3. *Pristoscelis deplanatus*, Woll.; and details.
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5. *Clerus Paivæ*, Woll.
6. *Thallestus typhœoides*, Woll.; and details.
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3. ,, *subcalvus*, Woll.
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6. ,, *latipennis*, Cur.; do.
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8. ,, *radiatus*, Ramb.; do.
9. ,, *? concentricus*, Kol.; do.

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XI. Development of *Lonchoptera* (*lutea*, P. ?).

1. Outline of larva seen from above. × 30.
   a a and *b b*. The lines along which the larval skin splits to admit of the escape of the perfect insect.
   c. Anterior spiracle.
   d. Posterior spiracle.
   e. Longitudinal trachea.
   f f. Two transverse branches.
   g. Minute orifice on the fourth segment.
2. First three segments, with the head retracted. × 60.
3, 4. Organs on the head, apparently adapted for sensation, and possibly representing antennæ. × 250.
5. Portion of margin. × 60.
6. Skin of dorsal surface. × 250.
7. Part of the last segment.
   a. The large posterior seta.
   b. The spiracle.
   c. The trachea.
   d. A place where two of the lateral processes have been slightly separated from one another.

Plate.	Fig.	
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	4.	,, *placidus*, Smith, ♂.
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	6.	*Cryptocerus elongatus*, Klug, ☿.
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	4.	,, *punctipennis*, W.W.S.; and details.
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	5.	,, *longipes*, Smith; worker
	6.	,, *Mombuca*, Smith; and details.
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	6.	*Zygocera pruinosa*, MacL., ♂.
	7.	,, *metallica*, Westw., ♀.

ADDITIONS TO THE LIBRARY.

FROM THE 1st JANUARY, 1862, TO THE 31st DECEMBER, 1863.

[NOTE.—*The books to which the letter* (A) *is prefixed have been accepted subject to certain conditions embodied in a Minute of the Council dated 6th April*, 1863.]

(A) L'Art de conserver et gouverner les Abeilles, de fabriquer le Miel et la Cire. 12mo. Paris. 1801.

Athenæum. 1862, 1863.

(A) BAGSTER (Samuel, Jun.), The Management of Bees. With a description of the "Ladies Safety Hive." 8vo. London. 1834.

(A) Bees. The Naturalist's Library. Entomology. Vol. VI. 8vo. Edinburgh. 1840.

BELLARDI (Luigi), Saggio di Ditterologia Messicana. Parte II., ed Appendice.

(A) BEVAN (Edward), The Honey Bee. 8vo. London. 1827.

(A) „ „ Another Edition. 8vo. London. 1838.

(A) DE BLANGY (Ducarne), Traité de l'Education économique des Abeilles. 12mo. Paris. 1771.

BOHEMAN (C. H.), Monographia Cassididarum. Tom. IV. Supplementum.

BOISDUVAL (J. A.), Entomologie du Voyage de l'Astrolabe. 1 vol. 8vo. text (*Lepidoptera*), and 1 vol. fol. of plates.

(A) BONNER (James), The Bee-Master's Companion, and Assistant. 8vo. Berwick. 1789.

(A) „ „ A new Plan for speedily increasing the number of Bee-Hives, &c. 8vo. Edinburgh. 1795.

Boston Journal of Natural History. Vol. VII. Nos. 1—3.

BRAUER (Fr.), Beiträge zur Kenntniss des inneren Baues und der Verwandlung der *Neuropteren*.

„ Beiträge zur Kenntniss der Verwandlung der *Neuropteren*. 2 Parts.

„ Verzeichniss der im Kaiserthume Oesterreich aufgefundenen Odonaten und Perliden.

„ Entwickelungs-Geschichte der *Panorpa communis*, Linné.

BROWN (Edwin), On the Genus *Acentropus*.

(A) BUTLER (Charles), The Feminine Monarchie. 12mo. Oxford. 1609.

(A) „ „ Another Edition. 4to. London. 1623.

(A) „ „ Another Edition. 4to. Oxford. 1634.

(A) „ „ Another Edition (Latin). 12mo. London. 1673.

(A) „ „ Another Edition. 12mo. London. 1704.

Canadian Naturalist and Geologist, and Proceedings of the Natural History Society of Montreal; conducted by a Committee of the Natural History Society. Vols. VI., VII, Nos. 1—6.

CANDEZE (E.), Monographie des Elaterides. Tome IV.

(A) Chambon (A.), Manuel de l'Education des Abeilles, ou Manière sûre et facile de les conserver, de les multiplier et d'en tirer un grand profit. 8vo. Paris. Thermidor, An VI.

(A) Chylinski (Dobrogost), The Bee-Keeper's Manual. 12mo. London. 1845.

Clark (Hamlet), Catalogue of Halticidæ (being a continuation of the British Museum Catalogue. Part I. 1860).

Collingwood (Cuthbert), On the Opportunities of advancing Science enjoyed by the Mercantile Marine.

(A) Comfort to Aristeus; or a few useful Hints on the Management of Bees. 12mo. London, n.d.

(A) Cotton (William Charles), My Bee Book. 8vo. London. 1842.

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OF

THE ENTOMOLOGICAL SOCIETY

OF LONDON,

MARCH 1864.

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1847	Wilson, C. A., Adelaide, South Australia.
1841	Younger, Lieut. John Robertson.

ERRATA.

TRANSACTIONS.

Page 447, line 20 from bottom, for "*Ludetringii*," read "*Ludekingii*."
,, 484 ,, 9 ,, for "300," read "400."
,, 563 ,, 11 from top, for "*asæmoides*," read "*asemoides*."

JOURNAL OF PROCEEDINGS.

Page cvii, line 20 from top, for "N. S. v.," read "3rd Series, vol. i., p. 437."
,, cviii ,, 3 from bottom, for "SOMNERI," read "SOMMERI."
,, cix ,, 6 from top, for "Somner," read "Sommer."
,, cxvii ,, 21 ,, for "four," read "six."
,, cl ,, 14 from bottom, for "PLATYCEPHALA," read "PLANIFRONS."
bottom line, for "platycephala," read "planifrons."
,, cli, line 4 from bottom, for "Apelocheira," read "Aphelocheira."

TRANSACTIONS

OF THE

ENTOMOLOGICAL SOCIETY

OF

LONDON.

I. *On* Pronophila, *a Genus of the Diurnal* Lepidoptera; *with Figures of the new Species, and reference to all those which have been previously figured or described.*

By W. C. Hewitson.

[Read March 4th, 1861.]

About fifteen years ago, the time when I first thought it possible that a butterfly might possess beauty, although it was not British, and became thoroughly fascinated with these beautiful things, there was not, I believe, a single example of this genus in any of our English collections. In 1846, Mr. Dyson sent several species from Venezuela; there are a few from Bolivia and Peru, but their favourite places of resort are those mountainous districts which surround the city of Bogota, and it is by the collections of Mrs. Mark and Mr. Stevens that we have chiefly been enriched.

The genus *Pronophila*, which I am about to illustrate for the Transactions of the Society (happily named by Dr. Boisduval), will contain, as I propose to extend it, about forty species, not differing at all in the neuration of the wings; all, with one exception, with the eyes hairy; the palpi long and densely clothed with hair, protruded in one species to a greater length even than in *Lybithea*. Differing widely in contour as well as in colour: in form—from the species delineated in the first four plates (a very natural group) to the tailed *Pronophila Phoronea* of Doubleday, and the singular species *P. Propylea* of Hewitson, with its falcate wings.

In colour *P. Tauropolis* of Boisduval stands apart from all the rest. Some of the species are subject to great variation, and I would not be surprised to find that *P. Protogenia*, pl. 6, fig. 38, *P. Peurta* of Westwood and *P. Pronax* of Hewitson, which are figured side by side in the "Exotic Butterflies" to show how widely they differ on the underside of the posterior wings, should prove to be of the same species.

P. Thelebe of the "Genera," *P. Orcus* of Latreille, *P. Cordillera* of Westwood and *P. Porsenna*, pl. 5, fig. 34, are most probably only local varieties of one species.

Some of the more obscure species of a uniform brown above and obscurely undulated below, with but few marks and those varying greatly in their form, are not easily determined; examples, apparently of one species, having the wings of different proportions; the margins of some even, of others distinctly dentated.

Some of the species which I have included in this genus have the appearance of being intruders. One from Mexico has the eyes smooth like *Satyrus*, with the palpi and neuration of *Pronophila*. Some are nearly allied to species of *Lymanopoda* of Westwood, and are, I believe, considered by him to belong to that genus, but they differ so widely from the typical species of *Lymanopoda*, that I have thought it better to place them here.

They are all from South America.

1. *Pronophila Parepa.* (Pl. I. figs. 1, 2.)

Alis omnibus rufo-fuscis fasciâ angustâ maculari rufâ; subtus posticis griseo-undulatis.

Upperside rufous-brown: both wings crossed by a narrow macular submarginal rufous band.

Underside as above, except that the anterior wing has the outer margin undulated with grey, that the posterior wing has the outer half also undulated with grey, and is without the rufous band.

Exp. 2 inch.

Hab. Guayaquil.

In the Collection of W. C. Hewitson.

2. *Pronophila Phila.* (Pl. I. figs. 3, 4.)

Alis omnibus fuscis: anticis pone medium fasciâ latâ rufâ; posticis maculâ apicali rufâ; subtus undulatis.

Upperside dark brown: anterior wing crossed transversely beyond the middle by a broad curved rufous band: posterior wing with a rufous spot at the apex.

Underside as above, except that the posterior wing and the apex of the anterior wing are undulated throughout with light grey.

Exp. $1\frac{17}{20}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

3. *Pronophila Phaea.* (Pl. I. figs. 5, 6.)

Alis omnibus rufo-fuscis, pone medium fasciâ rufâ curvatâ; subtus, anticis marginibus griseis, posticis griseo-undulatis.

Upperside dark red-brown: both wings crossed beyond the middle by a broad transverse rufous band, dentated on its outer edge.

Underside as above, except that the apex of the anterior wing is grey; that the basal half of the posterior wing is undulated throughout with brown and grey marked with three light spots; that the transverse band is white, slightly undulated with rufous-brown; that the space between it and the outer margin is undulated with brown and grey, and that the transverse band on each wing, from the costal margin to the middle, is marked between each nervure by a minute black spot, dotted with white.

Var. 1. With the transverse band above clouded with brown: the basal half of the posterior wing below of a uniform dark brown.

Var. 2. With the transverse band of the anterior wing scarcely seen.

Exp. $2\frac{1}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

4. *Pronophila Peruda.* (Pl. I. figs. 7, 8.)

Alis omnibus fuscis, pone medium fasciâ rufâ latâ rectâ; subtus marginibus griseo-undulatis.

Upperside dark brown: both wings crossed beyond the middle by a nearly straight, broad, equal, rufous band.

Underside as above, except that the outer margins are undulated with grey; that the band of the posterior wing is nearly white slightly undulated with light brown and marked with two minute black spots, and that there is a small white spot near the anal angle.

Exp. $2\frac{2}{10}$ inch.

Hab. Amazon.

In the Collection of the British Museum.

5. *Pronophila Plotina*. (Pl. II. figs. 9, 10.)

Alis omnibus fuscis ; posticis maculâ magnâ rufâ anali.

Upperside dark brown. Anterior wing lighter beyond the middle; posterior wing with a large rufous spot on the outer margin from its middle to the anal angle.

Underside as above, except that the anterior wing has a light spot on the costal margin beyond the middle, and is slightly undulated with grey towards the outer margin ; that the posterior wing is red-brown, undulated throughout with darker brown, and crossed from the anal angle to beyond the middle by a band of yellow, and that the rufous spot is clouded and undulated with brown, marked by two lunular spots of lighter colour.

Exp. 2 inch.

Hab. Venezuela.

In the Collection of W. C. Hewitson.

6. *Pronophila Pylas*. (Pl. II. figs. 11, 12.)

Alis omnibus fuscis ; anticis maculis duabus albis ; subtus griseo-undulatis.

Upperside dark brown. Anterior wing with a small white spot near the costal margin beyond the middle, and between it and the anal angle a large spot, also white.

Underside with the basal half of both wings dark brown ; both crossed beyond it by a broad band, undulated with grey and brown ; both with a black line near the outer margin (zig-zag on the posterior wing) ; both with the outer margin broadly red-brown. Anterior wing with the white spots as above, except that the small spot is extended to meet the large one. The grey band of the posterior wing with one or two minute black spots dotted with white.

Exp. $2\frac{1}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

Nearly allied to *P. Pallantis*, but can scarcely be only a variety.

7. *Pronophila Peucestas*. (Pl. II. figs. 13, 14.)

Alis omnibus fusco-nigris ; anticis in medio fasciâ albâ ; subtus griseo-undulatis, posticis punctis lineisque albis.

Upperside dark brown. Anterior wing *rounded* at the apex ; crossed midway by a broad transverse band of white commencing at the costal margin, proceeding in a direct line towards the anal

angle, but extending only a little beyond the first branch of the median nervure.

Underside light brown. Anterior wing with the band as above; an indistinct white spot within the cell, a second near the apex; a black line near the outer margin. Posterior wing with the basal half (which has its boundary marked with three white spots) dark brown, succeeded by a broad, nearly equal, clouded band of brown and grey traversed by a row of minute white spots and bordered near the outer margin by a zig-zag black line.

Exp. $2\frac{3}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

8. *Pronophila Pallantis.* (Pl. II. figs. 15, 16.)

Alis omnibus fuscis; anticis ante medium fasciâ latâ albâ (lineâ nigrâ intersectâ); subtus griseo-undulatis.

Upperside dark brown. Anterior wing *truncated* at the apex, crossed before the middle by a broad transverse band of white (marked by a black line at the boundary of the cell), reaching from the costal margin to the inner margin above the anal angle.

Underside light grey-brown. Anterior wing with the white band as above; grey near the apex, marked with a black line near the outer margin. Posterior wing undulated; the basal half (which has a light spot on the costal margin) is dark brown, has its outer boundary very angular, and is succeeded by a broad unequal band of light grey-brown, marked with two small black spots dotted with white, and bordered with a zig-zag line of black.

Exp. $2\frac{2}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

9. *Pronophila Physcoa.* (Pl. III. fig. 17.)

Alis omnibus rufo-fuscis; anticis maculâ magnâ rufescente; subtus ubique atrâ undulatis.

Upperside brown; anterior wing with a large oval rufous spot from the third median nervule to the anal angle.

Underside as above, except that it is undulated throughout with darker brown.

Exp. $2\frac{1}{2}$ inch.

Hab. Bolivia.

In the Collection of the British Museum.

10. *Pronophila Phanias.* (Pl. III. fig. 18.)

Alis omnibus rufo-fuscis, posticis dentatis ; subtus anticarum apice, posticis ubique atrâ undulatis.

Upperside uniform rufous-brown.

Underside. Anterior wing rufous-brown ; crossed transversely at the middle and near the outer margin by lines of dark brown, with between them a row of minute whitish spots ; posterior wing undulated with rufous-brown and grey and black ; crossed transversely at the middle and near the outer margin by zig-zag black lines ; a minute white spot near the anal angle.

Exp. 2 inch.

Hab. Minas Geraes.

In the Collection of W. C. Hewitson.

11. *Pronophila Poesia.* (Pl. III. fig. 19.)

Alis omnibus fuscis, dentatis ; subtus, anticis prope apicem maculâ griseâ, posticis griseo-undulatis maculâ albâ in medio marginis costalis.

Upperside uniform dark brown.

Underside dark brown. Anterior wing with a large rufous spot near the outer margin, a white spot near the apex. Posterior wing undulated throughout with brown and grey, lightest at the anal angle and the apex ; crossed from the inner margin to the middle by a zig-zag band of grey ; a white spot on the costal margin, and a minute spot of white near the anal angle.

Exp. $2\frac{4}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

12. *Pronophila Pisonia.* (Pl. III. figs. 20, 21.)

Alis omnibus fuscis ; subtus fasciâ angustâ atrâ ; posticis ocello albo-pupillato prope angulum analem.

Upperside, male, dark brown.

Underside lighter brown, undulated : both wings crossed near the middle by a narrow black band bordered outwardly with lighter colour. Anterior wing with four minute spots of white near the apex. Posterior wing with an ocellus pupilled with white near the anal angle, and a line of minute white spots parallel to the outer margin.

Female differs in being larger and of a lighter brown—in having the anterior wing crossed on the upperside by a band of darker brown.

Var. male, fig. 20. With a white spot on the costal margin of the posterior wing.

Exp. ♂ 2 inch. ♀ $2\frac{2}{10}$ inch.

Hab. Venezuela.

In the Collection of the British Museum.

13. *Pronophila Panyasis.* (Pl. III. fig. 22.)

Alis omnibus rufo-fuscis, dentatis ; subtus, anticarum marginibus, posticis ubique albâ et atrâ undulatis.

Upperside uniform rufous-brown, the margins dentated and spotted with white.

Underside. Anterior wing rufous-brown, undulated on the costal margin and at the apex with black and grey. Posterior wing angular at the apex, beautifully variegated with rufous-brown and black and grey ; crossed transversely beyond the middle by a waved band of black, and near the outer margin by a zig-zag black line ; two nearly white spots on the costal margin.

Exp. 2 inch.

In the Collection of W. C. Hewitson.

14. *Pronophila Piletha.* (Pl. III. fig. 23.)

Alis omnibus rufo-fuscis ; posticis subtus undulatis et nebulosis, pone medium fasciâ maculâque costali albis.

Upperside rufous-brown.

Underside. Anterior wing dark brown, lighter towards the outer margin ; the apex and a spot near it grey. Posterior wing light brown, undulated and clouded with darker brown ; crossed beyond the middle from the inner margin (where it is broad) to the discoidal nervure (where it ends in a point) by a white band. A spot on the costal margin, and a minute spot near the anal angle, also white.

Exp. 2 inch.

Hab. Venezuela.

In the Collection of the British Museum.

This is probably only a variety of the next.

15. *Pronophila Prytanis.* (Pl. III. fig. 24.)

Alis omnibus fusco-nigris ; posticis subtus maculâ anali albâ.

Upperside uniform dark brown. The margin of the anterior wing distinctly spotted with white.

Underside dark brown. Both wings with an indistinct white spot on their costal margins beyond the middle. Anterior wing with two or three minute white spots between the nervures. Posterior wing darker than above, undulated, with a large, nearly bifid, silvery-white spot, and a minute spot, also white, at the anal angle.

There is a variety of this species in which the white spot near the anal angle, on the underside of the posterior wing, is produced until it reaches the third median nervule in a point: it is without the indendation on its inner border.

Exp. $2\frac{3}{10}$ inch.

Hab. Venezuela.

In the Collection of W. C. Hewitson.

16. *Pronophila Pausia.* (Pl. IV. fig. 25.)

Alis omnibus fuscis, marginibus rufescentibus; anticis subtus punctis duobus albis; posticis fasciâ rufescente punctisque quatuor albis.

Upperside dark brown rufous towards the outer margin of the anterior wing.

Underside dark brown rufous towards the anal angle of the posterior wing. Anterior wing with two or three very minute white spots near the apex. Posterior wing crossed from the anal angle to beyond the middle by a band of lighter colour, where it is met by a line of three or four small white spots.

Exp. $2\frac{2}{10}$ inch.

Hab. Bolivia.

In the Collection of the British Museum.

17. *Pronophila Paneis.* (Pl. IV. figs. 26, 27.)

Alis omnibus fuscis; subtus, anticis fasciâ indistinctâ punctisque quatuor albis; posticis fasciâ rufescente.

Upperside dark brown.

Underside lighter brown. Anterior wing crossed transversely at the middle by a narrow indistinct band, most distinctly marked near the costal margin, with, between it and the apex, a line of four minute white spots. Posterior wing crossed by a triangular rufous band from the anal angle to the middle, where it is met by some grey spots, which are continued near the outer margin, but much less distinctly marked.

Variety, fig. 26. Without the minute spots of the anterior wing.

The band of the posterior wing much shorter. A minute white spot near the anal angle.

Exp. $2\frac{1}{10}$ inch.

Hab. Upper Amazon.

In the Collection of W. C. Hewitson.

18. *Pronophila Porina.* (Pl. IV. fig. 28.)

Alis omnibus fuscis; anticis ante medium fasciâ albâ; subtus, anticarum apice, posticis ubique undulatis.

Upperside rufous-brown. Anterior wing crossed before the middle by a band of white.

Underside undulated throughout. Anterior wing with the apex and costal margin grey. Posterior wing rufous-brown towards its outer margin.

Exp. $1\frac{2}{10}$ inch.

In the Collection of W. C. Hewitson.

This species differs considerably from those just described, in the rounded form of the apex of the anterior wing. In other respects it is similar. I have, unfortunately, no record of its locality.

19. *Pronophila Proerna.* (Pl. IV. fig. 29.)

Alis omnibus fuscis; subtus anticarum apice, posticis ubique griseo-undulatis punctis duobus albis.

Upperside dark brown.

Underside also dark brown, rufous on part of the anterior wing. Anterior wing with the apex undulated with grey. Posterior wing undulated throughout with grey, with a small spot of white near the apex and anal angle.

A variety of this species has the white spot near the anal angle of the posterior wing much larger.

Exp. $2\frac{6}{10}$ inch.

Hab. Bogota.

In the Collection of the British Museum.

20. *Pronophila Phœnissa.* (Pl. IV. fig. 30.)

Alis omnibus rufo-fuscis; posticis subtus maculâ albâ anali.

Upperside rufous glossy brown.

Underside dull brown; the outer margins undulated with grey. Posterior wing with a dull white triangular spot at the anal angle,

and a row of two or three minute white spots parallel to the outer margin.

Exp. $2\frac{3}{10}$ inch.

Hab. Bogota.

In the Collection of the British Museum.

21. *Pronophila Polusca.* (Pl. IV. figs. 31, 32.)

Alis omnibus fuscis; posticis subtus rufescentibus fasciâ indistinctâ punctisque duobus albis.

Upperside dark brown.

Underside. Anterior wing dark brown, with the apex grey. Posterior wing rufous-brown undulated with darker brown: crossed transversely, a little beyond the middle, by a narrow band of lighter colour, with, between it and the outer margin, two small white spots.

Variety, fig. 32. With the outer half of the wing (the apex excepted) light rufous.

Exp. $2\frac{1}{2}$ inch.

Hab. Bogota.

In the Collection of W. C. Hewitson.

22. *Pronophila Orchus.*

Satyrus Orchus, Latr. in Humb. and Bonpl. Obs. Zool. ii. p. 72, pl. 35, f. 1, 2.

Taygetis Orchus, Westw. in Doubl. and Hewits. Gen. Diur. Lep. p. 357.

Alis omnibus nigro-fuscis; anticis sub apice maculis quatuor griseis.

Upperside black. Anterior wing *with four grey spots* near the apex.

Underside. Anterior wing dark brown, lighter near the base, marked beyond the middle by a rufous spot, followed by a line of four light blue spots; the apex grey, marked with two white spots. Posterior wing light grey, sometimes almost white; the base and a broad transverse band before the middle dark brown, followed by a transverse band of eight black or brown ocelli, each surrounded with a line of light brown, each usually with a pupil of light blue; a sub-marginal zig-zag black line.

Exp. $3\frac{1}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

23. *Pronophila Thelebe.*

P. Thelebe, Doubl. and Hewits. Gen. Diur. Lep. pl. 60. f. 3.

Alis omnibus nigro-fuscis; anticis sub apice maculis duabus aut tribus albis.

Upperside black. Anterior wing *with a bifid white spot* near the apex, sometimes surmounted by a round black spot bordered with white, sometimes followed near the middle of the outer margin by a third spot of white.

Underside. Anterior wing dark brown, marked beyond the middle by a rufous spot, followed by a line of three light blue spots; the apex grey, marked by two white spots (one large and bifid), with below them a third minute white spot. Posterior wing grey; the base and a broad transverse band before the middle dark brown, followed by a transverse band of eight black or brown ocelli, the irides white, the pupils (when any) light blue; a submarginal *dentate* black line.

Exp. $2\frac{7}{10}$ inch.

Hab. Venezuela.

Var. *a.* Without the rufous spot of the anterior wing; the posterior wing of a much darker grey; the ocelli obscure; the submarginal black line *zig-zag, not dentate,* the outer margin broadly brown.

Exp. $3\frac{1}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

24. *Pronophila Cordillera.* (Pl. V. fig. 33.)

P. Cordillera, Westw. in Doubl. and Hewits. Gen. Diur. Lep. p. 358.

Alis omnibus nigro-fuscis; subtus anticis rufis, ocellis septem nigris (duobus minutis), ceruleo-pupillatis; posticis griseo-fuscis fasciâ latâ transversâ fuscâ ocellisque octo nigris albo-pupillatis.

Upperside black.

Underside. Anterior wing rufous, crossed transversely beyond the middle by a band of five large *oval* black spots, each with its centre light blue; two small black spots near the apex, also dotted with blue, the outer margin broadly brown. Posterior wing grey, clouded with brown, crossed before the middle by a broad band of brown, followed by a band of eight distinct black

ocelli, the pupils light blue, the irides light brown, bordered with darker brown. A sub-marginal zig-zag indistinct black line, the margin broadly brown.

Exp. $3\frac{1}{10}$ inch.

Hab. Venezuela.

In the Collection of W. C. Hewitson.

25. *Pronophila Porsenna.* (Pl. V. fig. 34.)

Alis omnibus nigro-fuscis ; subtus fuscis : anticis ocellis quinque ceruleo-pupillatis ; posticis fasciâ latâ transversâ fuscâ ocellisque octo minutis : nonnullis albo-pupillatis.

Upperside black. The apex of the anterior wing lighter.

Underside. Anterior wing dark brown, lighter near the base, crossed transversely beyond the middle by four nearly *round* black spots, each with its centre light blue, the fourth spot with its inner margin rufous ; a transverse band of grey near the apex, touching three of the black spots. Posterior wing grey, with a narrow transverse band near the base, a broad unequal band before the middle, the outer margin, the boundary of a band of ocelli, all brown; the ocelli grey, like the rest of the wing; the pupils small, indistinct and black, sometimes dotted with white ; a sub-marginal waved black line.

Exp. $3\frac{1}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

I have been compelled either to describe this as a new species or to consider it (with the two last described) as varieties of *Orchus.* The ocelli, which cross the posterior wing of this species, are much more obscurely marked than in the three preceding.

26. *Pronophila Puerta.*

P. Puerta, Westw. in Doubl. and Hewits. Gen. Diur. Lep. p. 358 ; Hewitson's Ex. But. vol. ii. Sat. pl. 41, f. 12.

In the Collection of W. C. Hewitson.

27. *Pronophila Pronax.*

P. Pronax, Hewitson's Ex. But. vol. ii. Sat. pl. 41, f. 10, 11.

In the Collection of W. C. Hewitson.

28. *Pronophila Protogenia.* (Pl. VI. fig. 38.)

Alis omnibus rufo-fuscis, fasciâ communi rufâ punctis nigris notatâ; subtus rufo-fuscis, posticis duplici serie transversâ macularum flavarum, intermedium ocellis nigris albo-pupillatis.

Upperside, male, dark brown. Both wings crossed near the outer margin by a broad, orange-rufous band traversed by a row of round black spots of unequal size: four or five on the anterior wing, six or seven on the posterior wing.

Underside rufous-brown. Anterior wing as above, except that there are two or three white spots near the apex, and that the black spot nearest the apex is dotted with white. Posterior wing with the nervures black; crossed beyond the middle by two transverse bands of pale yellow spots, with between them a row of distinct black spots, dotted with white, the spots of the lower band irregularly placed in pairs.

Female does not differ from the male except in its being rather larger, and in having the sub-marginal row of black spots more distinctly marked.

Exp. $2\frac{6}{10}$ inch.

Hab. New Granada.

In the Collection of W. C. Hewitson.

This species is very closely allied to *P. Peurta* and *P. Pronax*. On the upperside the three species are very nearly alike: on the underside *P. Protogenia* is most nearly allied to *P. Pronax;* they are both without the white band which crosses the posterior wing of *P. Peurta* before the middle.

29. *Pronophila Prochyta.* (Pl. VI. fig. 39.)

Alis omnibus nigro-fuscis; subtus anticis maculâ magnâ apicali griseâ; posticis maculis sub-marginalibus albis et griseis.

Upperside rufous-brown.

Underside. Anterior wing from the base to the middle rufous, beyond it dark brown, crossed by a band of four rufous spots; a large triangular spot on the costal margin near the apex, and two ill-defined spots, near the middle of the outer margin, grey. Posterior wing grey, with the outer margin (except the apex), and an

ill-defined band near the middle, rufous-brown; a sub-marginal band of irregular spots of silvery white or grey.

Exp. $3\frac{2}{10}$ inch.

Hab. Bolivia.

In the Collection of the British Museum.

This is probably only a variety of *P. Irmina*, from which it scarcely differs, except in wanting the large grey-white spot of the upperside.

30. *Pronophila Irmina.*

♂ *P. Irmina*, Doubl. and Hewits. Gen. Diur. Lep. p. 358, pl. 60, f. 2.

♀ Herrich-Schäffer, Lep. Ex. f. 85, 86.

In the Collection of W. C. Hewitson.

31. *Pronophila Tauropolis.*

P. Tauropolis, Doubl. and Hewits. Gen. Diur. Lep. p. 358, pl. 66, f. 1.

In the Collection of W. C. Hewitson.

32. *Pronophila Phoronea.*

P. Phoronea, Doubl. and Hewits. Gen. Diur. Lep. p. 358, pl. 60, f. 1.

In the Collection of W. C. Hewitson.

33. *Pronophila Propylea.*

P. Propylea, Hewits. Ex. But. vol. ii. Sat. pl. 40, f. 5, 6.

In the Collection of W. C. Hewitson.

34. *Pronophila Phaselis.* (Pl. VI. fig. 37.)

Alis omnibus nigro-fuscis; subtus posticis fasciis maculisque argenteo-albis.

Upperside rufous-brown.

Underside. Anterior wing brown; the apex and outer margin rufous; two nearly white spots near the apex, and some indistinct dark brown spots near the outer margin. Posterior wing rufous-brown: crossed beyond the middle by a band of six ocelli, four of them dark brown, each with a minute dot of white, the middle pair rufous, bordered with a circle of yellow; marked by several silvery white spots, three near the base crossing the wing, one at the middle of the costal margin, the rest in a

band which commences at the apex, and, coming between the two rufous ocelli, divides into two branches, which nearly reach the inner margin, inclosing three of the ocelli.

Exp. $2\frac{4}{10}$ inch.

Hab. Venezuela.

In the Collection of the British Museum.

35. *Pronophila Prosymna* ♂. (Pl. V. figs. 35, 36.)
♀. Hewits. Ex. But. vol. ii. Sat. pl. 40, f. 3, 4.

Upperside, male, rufous from the base to the middle, beyond it black; crossed on the anterior wing by a broad, nearly equal, rufous band—on the posterior wing by a band of rufous spots.

Underside. Anterior wing as above, except that the apex is grey. Posterior wing light grey, clouded and undulated with brown: crossed at the middle of the wing by a broad band, dark brown, and of equal breadth from the costal margin to the middle of the wing, beyond it rufous-brown, irregular, and ending in two spots near the middle of the costal margin: two spots of white (one of them of irregular form) near the middle of the outer margin.

Exp. $2\frac{6}{10}$ inch.

Hab. New Granada.

In the Collection of the British Museum.

The figures in the plate are drawn from two very imperfect examples, but I have no doubt that they are males of *P. Prosymna*.

36. *Pronophila Zapatoza.*

Westwood in Gen. Diur. Lep. p. 358.
Herrich-Schäffer, Lep. Ex. f. 87, 88.
Hewitson, Ex. But. vol. ii. Sat. pl. 40, f. 1, 2.

In the Collection of W. C. Hewitson.

37. *Pronophila Cirta.*

Lasiophila Cirta, Felder, Wien Ent. Monats. vol. iii. pl. 6, f. 1. 1859.

Pronophila Præneste, Hewitson, Ex. But. vol. ii. Sat. pl. 41, f. 7, 8, 9. 1860.

38. *Pronophila Patrobas.* (Pl. VI. figs. 40, 41.)

Alis omnibus griseo-fuscis; anticis punctis quatuor albis: posticis fasciâ sub-marginali rufâ punctis albis duobus notatâ; subtus anticis punctis quatuor nigris albo-pupillatis; posticis fasciâ sub-marginali brunneo-undulatâ maculis albis quinque notatâ.

Upperside dark brown. Anterior wing lighter near the outer margin: crossed beyond the middle by four minute white spots. Posterior wing crossed near the outer margin by a broad rufous band, marked with two small white spots.

Underside as above, except that the apex of the anterior wing is grey and the white spots bordered with black, and that there is an indistinct sub-marginal band of brown; that the band of the posterior wing is grey, undulated with rufous-brown, marked on its inner border by four or five spots of pale yellow, dentated on its outer border.

The sexes are alike.

Exp. $2\frac{3}{10}$ inch.

Hab. Mexico.

In the Collection of W. C. Hewitson.

This species differs from the rest of the genus in having its eyes smooth.

39. *Pronophila Perperna.*

Alis omnibus rufo-fuscis; anticis ocello nigro (feminæ albo-pupillato); subtus nigro-undulatis ocello nigro albo-pupillato prope angulum analem; anticis maculâ albâ, posticis fasciâ macularum cineracearum.

Upperside, male, rufous-brown. Anterior wing with an indistinct black ocellus near the outer margin below its middle.

Underside rufous-brown, undulated with darker brown; each wing with a black ocellus, with pupil of white near the anal angle and an indistinct sub-marginal band of brown, zig-zag and sometimes broken into spots on the posterior wing. Anterior wing with a rufous band at the end of the cell, two or three grey-white spots on the costal margin beyond its middle, and a round white spot near the apex. Posterior wing dentated, crossed beyond the middle by a curved band of grey spots.

Female like the male, except that the ocellus on the upperside of the anterior wing is more distinct and pupilled with white; that on the underside there is a broad band of grey near the outer

margin of both wings, clouded with brown on the posterior wing, and that the ocellus of the anterior wing has a rufous border above it.

Var. Male. Without the ocellus on the upperside.

Exp. $2\frac{3}{10}$ inch.

In the Collection of W. C. Hewitson.

This species is very closely allied to *P. Pisonia*, and ought to have come next to it. It differs from it chiefly in having an ocellus and white spot on the underside of the anterior wing. I regret that I accidentally omitted it when I was preparing the plates. Descriptions only, of species so closely allied as some of those which I have endeavoured to elucidate here, are of very little worth.

Note.

The SIX PLATES in illustration of this Paper have been by inadvertence numbered "Vol. 6, N. S.," instead of "Vol. 1, Third Series."

II. *Notes on* Chrysomelidæ *in the Linnæan and Banksian Collections.* By G. R. Waterhouse, Esq., V.P.Z.S. &c.

[Read Nov. 5th, 1860.]

Having at distant periods twice examined the species of *Chrysomelidæ* in the Linnæan Collection,* and having again looked through the collection, with considerable care, within a few days, it has been suggested by a friend that my notes might be acceptable to the Society. I therefore beg to lay them before this meeting. I have quite recently also examined many of the *Chrysomelidæ* in the Banksian Collection, which it is supposed was named by Fabricius. However this may be, it is certain that he overlooked the specimens, and described many species from the Banksian Cabinet. The specimens in this last-mentioned collection are many of them in very bad condition, and require cleaning before they are capable of a very accurate examination; at the same time I think my determinations will be found generally correct. The Linnæan specimens, considering their age, are generally in good condition. I have examined only those which have the labels attached to them—labels which are said to be in Linnæus's own writing. I will take them as they stand in the collection, and it will be seen that they follow nearly in the same order as do the descriptions in the "Fauna Suecica." I will here observe that the species of the "Fauna" are generally well represented in the collection, but of those subsequently described in the "Systema" I find but a small number.

1. *Chrysomela Gottingensis* (Faun. Suec. 160, 505). Two different insects, each bearing the same name, but with separate labels, stand to represent the species. The first is the *Chrys. Gottingensis* of modern authors, and the second is the *Timarcha coriaria*. This last-named insect also stands in the Banksian Collection as *Chr. Gottingensis*.

2. *Chrys. Tanaceti* (Faun. Suec. 160, 507), *Adimonia*, id., of modern authors.†

* My first examination was in September, 1857; and I again examined the collection last year.

† I will not repeat this phrase hereafter—let it be understood, that the names given in the second column are those now in common use.

3. *Chr. graminis* (Faun. Suec. 160, 509). One specimen only. I took with me to the Linnæan Society specimens of the two green *Chrysomelæ* known to us by the Stephensian names *graminis* and *fulgida*, and after a careful comparison I was quite convinced that the Linnæan insect agreed with the latter species. When compared with our *Chr. graminis*, Steph., it differed in having the thorax broader and more convex, and less contracted in front, than in that insect: it differed also in colouring. Whereas all the specimens of *C. graminis*, Steph., which I have been able recently to examine, are of an uniform colour in the elytra, the Linnæan insect presents three colours in the elytra. They are of a bright golden green, with a narrow edging of blue at the suture; a broadish band of a golden-copper hue at the outer margin, and a blue patch within this, immediately behind the shoulder swelling. In *fulgida*, Stephens, this last-mentioned blue patch is often more extended, and then assumes the form of a blue band within the golden-copper band, but the condition presented by the Linnæan specimen is very commonly found. Now upon referring to M. Suffrian's descriptions I find that these same distinctions serve to distinguish the *Chr. graminis* of that author from his *Chr. Menthastri*, but that his description of *Chr. graminis* agrees with the Linnæan insect, and not with the *Chr. graminis* of Stephens's Collection. In short, *Chr. graminis*, Linn. Coll. is = *Chr. fulgida*, Steph., and = *Chr. graminis*, Suffrian; whilst *Chr. graminis* of Stephens's Collection is = *Chr. Menthastri* of Suffrian. I may add that the *Chrysom. graminis* of the Banksian Collection is the same as that in the Linnæan.

4. *Chrys. ænea* (Faun. Suec. 161, 510). This is decidedly not the *Lina* (or *Melasoma*) *ænea* of modern authors: it differs in having a relatively smaller thorax and more ample elytra. The thorax has the sides distinctly incrassated, and an irregular longitudinal depression at some little distance from, but parallel with, the lateral margin. The elytra are finely and evenly punctured throughout; the punctures show no tendency to form longitudinal series as in the *Chr. ænea* of Fab. The only specimen of the Linnæan Collection is of an æneous colour above, and æneous black beneath: the whole margin of the abdomen is rufous, the rufous being most extended on the last segments. In fact, the *Chr. ænea* of the Linnæan Collection is = *Lina cuprea*.

5. *Chrys. Alni* (Faun. Suec. 161, 511) = *Agelastica Alni*.

6. *Chrys. hæmaptera* (Faun. Suec. 161, 512) = *Crys.*, id.

7. *Chrys. Padi* (Faun. Suec. 161, 513). Upon a former occasion I took this insect to be the *Cyphon Padi*, but upon cleaning the specimen a little, I perceive that it has two or three faint costæ on each elytron, a character by which I am in the habit of distinguishing the *Cyphon coarctatus*, of which it is a smallish variety.

8. *Chrys. armoraceæ* (Faun. Suec. 161, 515) = *Phædon cochleariæ* (of Gyllenhal) = *Betulæ*, Suffrian. The elytra of the insect are delicately punctate-striated, with the interstices finely, but pretty distinctly, punctured; they have a distinct impression within the humeral hump, and are of an obscure greenish colour. It was compared with our common blue *Ph. Betulæ*, Steph. (= *cochleariæ*, Suffr.), from which it differed not only in having the humeral impression more distinct, but in being broader and less convex, and in having the interstices of the striæ of the elytra distinctly punctured.

9. *Chrys. cerealis* (Syst. Nat. 588, 17) = *Chrys.*, id.

10. *Chrys. fastuosa* (Syst. Nat. 588, 18), *Chrys.*, id.

11. *Chrys. halensis* (Syst. Nat. 589, 20), *Agelastica*, id.

12. *Chrys. vulgatissima* (Faun. Suec. 162, 517), *Phratora*, id. = *Phædon unicolor*, Steph.

13. *Chrys. vitellinæ* (Faun. Suec. 163, 519), *Phratora*, id.

14. *Chrys. Poligoni* (Faun. Suec. 163, 520), *Gastrophysa Polygoni*.

15. *Chrys. pallida* (Faun. Suec. 163, 521), *Gonioctena*, id.

16. *Chrys. Staphylea* (Faun. Suec. 163, 518), *Chrys.*, id.

17. *Chrys. polita* (Faun. Suec. 163, 522), *Chrys.*, id.

18. *Chrys. lurida* (Syst. Nat. 590, 28), *Chrys.*, id.

19. *Chrys. Populi* (Faun. Suec. 163, 523), *Lina*, id.

20. *Chrys. viminalis* (Faun. Suec. 163, 524). It appears to me that this is a singular variety of the *Chrysomela* (*Gonioctena*) *viminalis* of Suffrian—a variety so rare with us in England, that after looking over a large number of specimens, I have only succeeded in finding one individual presenting the same conditions, and that is in Dr. Leach's Collection. The point that is most striking about the Linnæan specimens is, that the thorax (instead of having a transverse black patch *at the base*, and which is more or less emarginated in front) has two smallish black spots in a transverse line behind the middle of the thorax, but distinctly removed from the base. The elytra are immaculate. The legs are entirely black, a character which helps to distinguish this species from the *Chrysom. triandræ* and *Chrys. affinis* of Suffrian. The species is represented in the Linnæan Collection by three specimens (two of which are on the label) answering to the above description, and a third specimen which has the thorax immaculate as well as the elytra.

21. *Chrys. decempunctata* (Faun. Suec. 164, 525) = *Gonioctena rufipes* and *G. 10-punctata*, Steph. There are three specimens stuck on the label bearing the name: the first is the *G. rufipes*, and the other two are the *Gon. 10-punctata* of Stephens (= *viminalis*, Suffr.), agreeing with our British specimens in their more common condition.

22. *Chrys. Lapponica* (Faun. Suec. 164, 526) = *Lina Lapponica.*

23. *Chrys. Boleti* (Faun. Suec. 165, 527) = *Diaperis Boleti.*

24. *Chrys. collaris* (Faun. Suec. 165, 528) = *Lina*, id.

25. *Chrys. hæmorrhoidalis* (Syst. Nat. 587, 6). A species of *Gonioctena* I am unacquainted with; of a pitchy black colour, with the inflected margins of the elytra rufescent. I suspect the var. *i.* of Gyllenhal's *Chrys. dispar* will be found to agree with the Linnæan specimen.

26. *Chrys. sanguinolenta* (Faun. Suec. 165, 529). Upon looking through the description of *C. sanguinolenta* given by M. Suffrian, soon after having examined the Linnæan specimen, I am inclined to think that the species described by that author is identical with the Linnæan one, but the disc of the thorax in the Linnæan insect is smooth. Upon comparing the two British insects, *C. sanguino-*

lenta, of Stephens's Manual (the northern species), and the *C. distinguenda*, of the same work (our southern insect), with the Linnæan specimen, it agreed with neither. In the form and sculpture of the thorax, and in the form of the orange band on the elytra, it agrees with *C. distinguenda*, but the elytra are much more coarsely punctured than in that insect. On the other hand, when compared with Stephens's *sanguinolenta*, it differed in being larger, in having the sides of the thorax more rounded in front, the disc smooth; in having the elytra less rugose, the great punctures rather less numerous, and in having the lateral orange band of a different form. In fourteen specimens of our northern insect which I examined, I found they all agreed in having this band dilated at the humeral hump, and presenting an outline which is convex in the direction of the suture, whilst in the Linnæan insect this same band is of uniform width as in our *distinguenda*, and the outline is therefore concave in the inner side at the humeral hump. Our northern species (which appeared to me to have the anterior angles of the thorax more produced) is of a dullish black colour, sometimes with an extremely faint bronze tint. *Distinguenda*, with its comparatively fine sculpturing, is blue-black above: the Linnæan insect is black, with a very obscure tint of blue. I have since seen specimens from Germany and other parts of Europe, which appear to me are the same as the Linnæan insect, but most of them (not all) had the disc of the thorax pretty distinctly punctured. Of such specimens, from the continent, there are many in the British Museum Collection, but in the same collection I only saw one insect which perfectly agreed with our *C. distinguenda*, and not one which quite agreed with our so-called *sanguinolenta*. This unsatisfactory note will serve to call attention to the subject; at present I am unwilling to identify either of the two British insects alluded to with the *sanguinolenta* of Linnæus.

27. *Chrys. marginata* (Faun. Suec. 165, 530) = *Chrys.*, id.

28. *Chrys. marginella* (Faun. Suec. 165, 531) = *Helodes*, id.

29. *Chrys. coccinea* (Faun. Suec. 166, 532), *Endomychus*, id.

30. *Chrys. oleracea* (Faun. Suec. 166, 534). Two specimens on the label; one is the *Haltica Erucæ*, Steph. = *Graptodera consobrina*, Allard; the other is certainly the *Grapt. oleracea* of Foudras, Allard, &c.

31. *Chrys. chrysocephala* (Faun. Suec. 166, 535). Is a small *cryptocephalus* with a black thorax, and blue elytra; the mouth, and a V-shaped mark on the forehead, the three basal joints of the antennæ, the anterior margin of the thorax, and the lateral margin, on the fore part, as well as the four anterior legs, pale testaceous; the under parts and the hind legs black, the elytra punctate-striate—an insect, in fact, which agrees with Gyllenhal's description of *Crypt. punctiger.* There is but one specimen, and that with the label attached. If this really be the *Chrys. chrysocephala* of the "Fauna Suecica," which I fully believe to be the case, Linnæus is of course wrong in attributing saltatorial powers to the insect, which has given rise to his description being referred to the *Psylliodes chrysocephala.*

32. *Chrys. Hyoscyami* (Faun. Suec. 166, 536) = *Psylliodes*, id.

33. *Chrys. atricilla* (Faun. Suec. 166, 537) is certainly the *Psylliodes affinis* of most modern authors = *Haltica atricilla*, Panzer. The posterior tibiæ are produced beyond the insertion of the tarsus, the elytra are punctate-striate, and the colouring as described in the "Fauna Suecica."

34. *Chrys. erythrocephala* (Faun. Suec. 166, 538) is a *Psylliodes*, certainly nearly allied to *Ps. chrysocephala.* It is rather smaller and shorter; black, with blue elytra; the head entirely red, the thorax more thickly and more distinctly punctured, the elytra more finely punctate-striated, the punctures not only being very delicate, but often somewhat remote from each other; the interstices almost impunctate; the anterior legs piceous, with the knees and feet testaceous; the hinder femora black, the tibiæ rufescent. I have seen three specimens from Germany agreeing with this Linnæan insect, which I have little doubt is the *Haltica chrysocephala*, var. *c.* of Gyllenhal, iii. 569. [The species has since been described in M. Allard's Monograph, under the name *Psylliodes rufilabris.*]

35. *Chrys. helxines* (Faun. Suec. 167, 540). Two specimens on the label, one is the *Crepidodera fulvicornis* of most modern authors (*Cr. helxines* of Foudras), the other is *Cr. aurata* of Marsham = *Crepidodera*, id. Foudras. Linnæus, it will be observed says of the insect, "*Antennis pedibusque omnibus testaceis.*"

36. *Chrys. exoleta* (Faun. Suec. 167, 541). One specimen only. This is a *Thyamis* (or *Teinodactyla*), and, after a careful

comparison with specimens of the *H. femoralis* (well described under that name by M. Allard), I am convinced it is specifically identical. The black on its hinder femora, as in the insect named, is chiefly confined to the upper part, in which it differs from the nearly allied insect *H. ochroleuca* of Marsham, which has the apical half of the posterior femora black. The insect I have taken plentifully at Darent, and near Reigate, on the *Echium vulgare*, and think I cannot be mistaken in this identification.

37. *Chrys. nitidula* (Faun. Suec. 167, 543) = *Crepidodera*, id.

38. *Chrys. nemorum* (Faun. Suec. 167, 543) = *Phyllotreta*, id. The legs are not entirely pale, as described, for the anterior femora are dusky at the base, and the posterior are black.

39. *Chrys. rufipes* (Faun. Suec. 168, 545) = *Crepidodera*, id.

40. *Chrys. fuscicornis* (Syst. Nat. 596, 66) = *Podagrica*, id.

41. *Chrys. holsatica* (Faun. Suec. 168, 544) = *Cyphon padi*. The Linnæan description, although it *might* possibly have been taken from this insect, undoubtedly squares better with the insect usually attributed to it—the *Haltica holsatica*.

42. *Chrys. tridentata* (Faun. Suec. 168, 546) = *Clythra*, id.—at least of the British authors.

43. *Chrys. quadripunctata* (Faun. Suec. 168, 574) = *Clythra quadripunctata*.

44. *Chrys. bipunctata* (Faun. Suec. 168, 548) = *Cryptocephalus*, id. of Suffrian, &c. If this insect be really a variety of the *Crypt. lineola*, Fab., as is supposed by M. Suffrian, it is rather remarkable that, whilst the latter is pretty common in England, the former is not found with us.

45. *Chrys. quadripustulata* (Faun. Suec. 166, 549), *Mycetophagus*, id.

46. *Chrys. Morœi* (Faun. Suec. 169, 550), *Cryptocephalus*, id.

47. *Chrys. nitida* (no doubt the *Chr. nitens* of the Faun. Suec. 169, 551) is = *Cryptocephalus*, id.

48. *Chrys. Barbareæ* (Faun. Suec. 169, 552) is a small black *Cryptocephalus*, a trifle less than the *Cr. Morœi:* the whole front of the head, the basal half of the antennæ, the front and side margins of the thorax (narrowly edged), and the lateral margin of the elytra on the fore half, pale yellow. The legs (with the exception of the posterior femora) are also yellow. The thorax is smooth, the elytra coarsely and rather irregularly punctate-striate, and somewhat rugulose in parts. Apparently the *Crypt. flavipes* (Fab.), Suffr. Linn. Ent. ii. 170, 59.

49. *Chrys. sericea* (Faun. Suec. 169, 554), *Cryptocephalus similis* of Steph. = *Cr. Hypochœridis* of Suffrian. I compared the insect with specimens of *sericeus*, Suffr., *aureolus*, Suffr., and *Hypochœridis*. The Linnæan specimen is a female, and is decidedly smaller than either of the two former insects, has the punctuation both of the thorax and elytra stronger, and, on the thorax, more dense. But I was more influenced by the condition of the fovea on the terminal segment of the abdomen: it agreed with that in my female specimens of *Hypochœridis*, in being less deep than in the other two species named, and in having its margins less acute, in fact, somewhat rounded. The colouring of the under parts also perfectly resembled that of *Hypochœridis*, being of a dark, and less brilliant green when compared with the other species.

50. *Chrys. Coryli* (Faun. Suec. 169, 555), *Cryptocephalus*, id.

51. *Chrys. labiata* (Faun. Suec. 169, 553), *Cryptocephalus*, id.

52. *Chrys. Pini* (Faun. Suec. 170, 556), *Cryptocephalus*, id.

53. *Chrys. sexpunctata* (Faun. Suec. 170, 559), *Cryptocephalus*, id.

54. *Chrys. merdigera* (Faun. Suec. 171, 563) = *Crioceris brunnea*, Fab. It will be seen that Linnæus describes the red-legged species as the typical condition of his insect, and afterwards adds, "*Variat capite et pedibus nigris.*"

55. *Chrys. Nymphææ* (Faun. Suec. 171, 565) = *Galleruca Nymphææ*, Gyll.

56. *Chrys. Caprea* (Faun. Suec. 171, 566) = *Galleruca Caprææ*, Gyll.

57. *Chrys. Calmariensis* (Syst. Nat. 600, 101) = *Galleruca Lythri*, Gyll.

58. *Chrys. tenella* (Faun. Suec. 171, 564) = *Galleruca tenella*, Gyll.

59. *Chrys. quadrimaculata* (Faun. Suec. 173, 571), *Phyllobrotica*, id.

60. *Chrys. cyanella* (Faun. Suec. 173, 572) = *Lema puncticollis*, Curtis, = *Lema cyanella* ♀, Gyll. iii. 639, = *L. rugicollis*, Suffr.

61. *Chrys. melanopa* (Faun. Suec. 173, 573), *Lema*, id.

62. *Chrys. flavipes* (Syst. Nat. 601, 106) = *Luperus flavipes*.

63. *Chrys. duodecim-punctata* (Faun. Suec. 172, 568), *Crioceris*, id.

64. *Chrys. Phellandrii* (Faun. Suec. 172, 569), *Helodes*, id.

65. *Chrys. Asparagi* (Faun. Suec. 172, 567), *Crioceris*, id.

Notes upon certain Chrysomelidæ in the Banksian Collection.

tenebricosa = *Timarcha lævigata*.
Gottingensis = *Timarcha coriaria*.
Banksii = *Chrysomela Banksii*.
Adonidis = *Entomoscelis*, id.
graminis = *graminis*, Linn. Coll.
hæmoptera = *Gottingensis*, Linn.
Populi = *Populi*, Linn.
Staphylæa = *Staphylæa*, Linn.
polita = *polita*, Linn.
10-*punctata*. Two specimens on the label; one is *Goniotecna rufipes*, and the other *G.* 10-*punctata*, Steph.
pallida = *Goniotecna*, id.
polygoni = *Gastrophysa*, id.
cerealis. Two specimens on label; one is the *Chr. cerealis*, and the other the *Chr. Americana*.
fastuosa = *fastuosa*, Linn.
sanguinolenta. Two specimens on label, one greatly resembles the *Chr. sanguinolenta* of the Linnæan Collection,

but is much larger and has the disc of the thorax punctured. The second is = *Chrys. distinguenda* of Stephens's Manual.

aucta = *Helodes*, id.

marginella, Helodes, id.

hæmorrhoidalis = *Lina ænea* of modern authors; not the *Chrys. ænea* of Linn. Coll.

fucata = *Chrys.*, id. = *hyperici*, Steph.

ænea = *Gastrophysa raphani.*

armoraceæ = *armoraceæ*, Linn. = *Phædon cochleariæ* of Gyllenhal, not of Suffrian!

viminalis agrees with the *viminalis* of the Linnæan Collection.

nitidula = *Crepidodera*, id.

helxines = *helxines*, Linn. = *fulvicornis*, Fab. *Graptodera helxines*, Foudras.

testacea = *Sphæroderma Cardui* of Kirby and Gyllenhal. Not the smaller species of a more rounded form, with the thorax more contracted in front, and with more delicate punctuation, which is usually regarded as the *Chrysom. testacea* of Fab. There are two specimens on the label, and these, it must be observed, are the originals of the Fabrician description.

subspinosa = *Zeugophora*, id.

fuscipes = *Podagrica*, id.

atricilla. Two specimens on the label; the first is *Thyamis tabida;* and the second, *Thyamis melanocephala.*

dorsalis = *Thyamis*, id. The original of the Fabrician description.

exoleta. Two specimens on the label; the first is *Crepidodera exoleta* of Gyll., Allard, &c. = *H. flava* and *H. similis* of Stephens. The other is the larger, more elongate, allied species, in which the punctures on the elytra are arranged in *irregular* rows = *Chrys. transversa*, Marsh., Gyll., Allard, &c. = *ferruginea*, Steph. = *impressa*, Redtenb.

tabida = *Thyamis* (or *Teinodactyla*) *Verbasci*, Marsh., Gyll., Stephens, Allard. Two specimens on the label. These are the originals of the Fabrician description, which has always been supposed to refer to a different insect.

nemorum = *Phyllotreta sinuata*, Redt., Allard.

atra = *Graptodera mercurialis.* A second label under the same insect bears the inscription "*mercurialis* MSS."

Phellandrii = *Helodes*, id.

12-*punctata* = *Crioceris*, id.
Asparagi = *Crioceris*, id.
cyanella = *Lema cyanella?* If it be, it is a singular variety, having a rufous patch on the forehead.
melanopa = *Lema*, id.
Tanaceti = *Adimonia*, id.
Alni = *Agelastica*, id.; and a second specimen on the same label is a *Graptodera* (*oleracea?*).
Betulæ = *Phratora vulgatissima*.
Capreæ = *Adimonia*, id.
vitellinæ = *Phratora*, id.
Calmariensis = *Galleruca Cratægi*, Förster, I believe. It is a very different insect to the *Chr. Calmariensis* of Linn.
sanguinea = *Adimonia*, id. = *Cratægi*, Marsh., Stephens.
tridentata = *Chrys.*, id. Linn. Coll. *Clythra*, id.
bipunctata = *Cryptocephalus bipunctatus*, Suffr.
bipunctata = *Cryptocephalus bipunctata*, var. Suffr. *Cr. linecla*, Auct.
sericea = *Cryptocephalus sericeus*, Steph.?
4-*maculata* = *Phyllobrotica*, ib.

III. *Descriptions of new Species of Aculeate* Hymenoptera, *collected at Panama by* R. W. Stretch, Esq., *with a List of described Species, and the various Localities where they have previously occurred.* By Frederick Smith, Esq., President of the Entomological Society of London.

[Read March 4th, 1861.]

The Collection of *Hymenoptera*, described in the following paper, was most liberally presented to me by Mr. Stretch. I need scarcely add, that this has greatly enhanced the pleasure which has attended the working out and describing of the species. A peculiar interest is attached to the *Hymenoptera* of Panama, forming, as it does, an intermediate station between North and South America. Amongst the *Vespidæ* will be found species common to both countries; and the capture of *Cryptocerus atratus* shows the known range of that species to be over an extent of country of not less than two thousand two hundred geographical miles.

The collection of specimens was accompanied by a number of very interesting examples of nests of *Formicidæ* and *Vespidæ*, and also by several valuable notes on the economy of some of the species. This is the first collection of *Hymenoptera* which I have seen from Panama, and will add greatly to our knowledge of the geographical distribution of species.

Family FORMICIDÆ, Leach.

Genus Formica, Linn.

1. *Formica arborea*, Smith, Cat. Hym. pt. vi. (*Formicidæ*), p. 44, 148.

Hab. Brazil; Island of Morago.

2. *Formica sericeiventris*, Guér. Voy. de la Coq. Zool. ii. 205 ☿.

Hab. Rio Janeiro; Columbia; Mexico.

Formica albo-fasciata.

F. fusco-nigra, abdomine albo-fasciato; pedibus articulationibus pallide testaceis.

Worker. Length 2¾ lines. Of a brownish black; the abdomen shining black, with a broad white fascia at the base of the second segment, not continued beneath; the head oblong, nearly of equal

width before the eyes and narrowed behind them; a central carina on the clypeus; the mandibles ferruginous; the extreme base of the scape, the trochanters and tips of the coxæ pale testaceous; the tarsi pale ferruginous. The scale of the peduncle incrassate, its side view wedge-shaped; its superior margin rounded; the abdomen sprinkled with pale hairs.

Formica striata.

F. nigra nitida; antennis pedibusque rufo-testaceis; thorace antice delicatule striato.

Worker. Length 1½ lines. Shining black; the head and abdomen smooth and impunctate; the thorax finely striated longitudinally above, the sides striated, the striæ curving round the posterior portion of the metathorax; the antennæ and legs rufo-testaceous; the base of the scape, the coxæ and trochanters pale testaceous. Abdomen ovate; the scale of the peduncle incrassate, its superior margin rounded.

Formica simillima.

F. nigra, nitida; thorace subtus, metathorace femoribusque ferrugineis; abdomine subnitido, basi ferrugineis.

Female. Length 6¼ lines. Shining black; the apical joints of the antennæ rufo-testaceous beneath. The thorax beneath, the coxæ, trochanters and femora, as well as the metathorax and scale of the peduncle, ferruginous; the apical joints of the tarsi ferruginous. Abdomen sub-opake, the base ferruginous; the apical margins of the segments ciliated with pale fulvous hairs.

This species very closely resembles the *F. ligniperda* of Europe, the principal difference in it appears to be that the scale of the peduncle is evenly arched above, not inclining to a point as in the European insect.

Formica corusca.

F. fusco-ferruginea, sericeo micans; scapo pedibusque ferrugineis.

Worker. Length 3 lines. Dark ferruginous, with patches of glittering silky pile, changeable and only visible in certain lights; the abdomen thinly sprinkled with glittering pale erect hairs. The anterior part of the head, mandibles, cheeks and scape of the antennæ bright ferruginous; the head oblong, rather narrowed in front; the eyes round and rather prominent; the clypeus with a central longitudinal carina. The thorax oblong, narrowed pos-

teriorly and rounded in front. Abdomen oblong-ovate, the scale of the peduncle incrassate, its superior margin rounded.

Genus Tapinoma, Foerst.

Tapinoma instabilis.

T. nigro-fusca, cinerascenti micans; pedum articulis tarsisque pallidis; squama depressa.

Worker. Length $1\frac{3}{4}$ lines. Brown-black, with the anterior half of the head, or sometimes the entire head, rufo-testaceous; shining and having a thin sericeous pilosity; the head heart-shaped, the eyes placed rather forwards and inwards; the antennæ inserted rather wide apart; the flagellum slightly thickened towards the apex. The thorax narrowed posteriorly, the metathorax oblique, with the scale of the peduncle inclined forwards against it; the articulations of the legs and the tarsi pale testaceous, the claw-joint rufo-piceous. Abdomen ovate.

Genus Polyrhachis, Smith.

1. *Polyrhachis bispinosus*, Smith, Cat. Hym. pt. vi. (*Formicidæ*), p. 74, 56.

Formica bispinosa, Oliv. Encycl. Méth. vi. p. 502, 60. Latr. Fourm. 133, pl. iv. fig. 20.

Formica fungosa, Fabr. Syst. Piez. p. 410, 60.

Hab. Santarem; St. Paul (Brazil).

This is a well known ant in Brazil, the material of which it forms its nest furnishes an article of commerce used as tinder for lighting cigars, &c.

Sub-family PONERIDÆ.

Genus Odontomachus, Latr.

1. *Odontomachus hæmatodes*, Latr. Gen. Crust. et Ins. iv. 128.

Formica hæmatoda, Linn. Syst. Nat. i. 965, 17.

Hab. Para; Cayenne.

Genus Ponera, Latr.

1. *Ponera pedunculata*, Smith, Cat. Hym. pt. vi. (*Formicidæ*), 96, 46.

Hab. Rio.

Genus Ectatomma, Smith.

Ectatomma scabrosa.

E. fusco-brunnea; capite, thorace, abdomine, segmento primo rugosis.

Worker. Length $3\frac{3}{4}$ lines. Fusco-ferruginous, with the man-

dibles and antennæ bright, the flagellum more or less obscure; the head and thorax very coarsely rugose, the basal segment of the abdomen less coarsely sculptured; the sculpture running into striæ above the insertion of the antennæ; the eyes round and prominent; the mandibles finely aciculate, their inner edge smooth, edentate, with their apex acute. The thorax with an acute tooth on each side of the prothorax and metathorax; the scale of the peduncle rugose, erect and oblong, slightly rounded above; the second segment of the abdomen delicately striated, transversely giving it a silky appearance; the apical segments pale testaceous.

Genus Pseudomyrma, Guér.

1. *Pseudomyrma cephalica*, Smith, Trans. Ent. Soc. (N. S.) iii. 168, 11, ♂ ♀ ☿.

Hab. Villa Nova (Brazil).

2. *Pseudomyrma flavidula*, Smith, Cat. Hym. pt. vi. (*Formicidæ*), p. 157, 15.

Hab. Santarem (Brazil).

3. *Pseudomyrma bicolor*, Guér. Icon. Règ. Anim. p. 427.

Hab. Columbia.

This species is very variable in colour; the typical form is "dull black, smooth; the mouth, mandibles, anterior border of the head and carina between the antennæ fulvous-red; the first node of the peduncle of the same colour, with a little spot of the same on each side of the second node." Amongst a series from Panama are individuals, black, with only the mandibles and anterior margin of the face fulvous-red; others have the mandibles, anterior margin of the face, thorax above and the peduncle and first node fulvous-red, with a dark stain at the base of the metathorax, extending more or less over the prothorax.

Pseudomyrma modesta.

P. pallide rufo-testacea, lævis; capite fusco; oculis nigris.

Worker. Length 3 lines. Pale rufo-testaceous, the head wider than the thorax; eyes very large, occupying nearly the entire side of the head, ocelli small, glassy-bright, and placed in a triangle on the vertex behind the eyes; the mandibles, anterior margin of the face and the antennæ pale rufo-testaceous. Thorax flattened above anteriorly, the front margin transverse, the lateral margins

acute; the prothorax paler than the metathorax; the femora and the tibiæ beneath slightly fuscous. Abdomen oblong, the petiole clavate, the second node pear-shaped; the abdomen shining, the rest of the body sub-opake; entirely destitute of hair.

Very like *Pseudomyrma nigriceps*, but without the spine on the petiole beneath as in that species; the petiole longer and more slender; the abdomen concolorous, whereas in *P. nigriceps* the apical segments are black.

The nest of this species was forwarded to me by Mr. Stretch; it consists of the large hollow thorns or spines of a species of *Acacia;* the spines are three inches long, tapering to a point from a broad base; the ants gnaw a small hole towards the point of the spine, the broad base then forms an admirable domicile for their young brood; there are no cells or divisions of any kind for the reception of the eggs or larva; the number of pupæ found in one nest was twenty-nine, and about twenty mature ants, all of these were workers; the pupæ are not inclosed in cocoons; these ants sting very violently.

Sub-family I. MYRMICIDÆ.

Genus Myrmica, Latr.

1. *Myrmica molesta*, Say, Bost. Journ. Nat. Hist. i. 293, 6.

This species has been received from France, Germany, Austria, Brazil (Rio), Australia and N. America. I have reason to believe that it is a native of Brazil, and has been carried to most parts of the world in merchandize.

Hab. Brazil; N. America; S. America; Australia; Britain; France and Madeira.

Myrmica reticulata.

Operaria.—Sordide rubra, abdomine nigro; capite thoraceque reticulato; pedibus pallide rufo-testaceis.

Worker. Length 2 lines. Rufo-ferruginous, shining; the abdomen smooth, shining black, except at the extreme base and apex, which are pale rufo-testaceous. The inner margin of the mandibles rufo-fuscous, and armed with a row of small acute teeth; the eyes black; the head and thorax reticulated, the latter with two acute spines at the apex; the legs paler than the thorax, with the articulations of a slightly darker tint; the body sprinkled with short, erect, pale, glittering hairs.

This species is of the size and form of the British species *Myrmica acervorum*. Mr. Parfitt took specimens in a botanic garden at Exeter, imported probably with Brazilian plants.

Myrmica glaber.

Operaria.—Rufo-testacea, lævis, tota nitidissima, nuda; abdomine apice fusco-nigro.

Worker. Length $1\frac{3}{4}$ lines. Testaceous red, entirely smooth and shining; head wider than the abdomen, in some examples considerably so, and having a rather deeply impressed line which extends from the back of the head to the insertion of the antennæ, where it is faintly impressed; the mandibles armed with several black teeth; the club of the antennæ 2-jointed; the eyes small and black; the head anteriorly and the base of the abdomen paler than the rest of the body; the metathorax without spines.

Myrmica polita.

M. rufo-fusca, lævis, tota nitidissima, nuda; mandibulis, antennis pedibusque pallide rufescentibus.

Worker. Length $1\frac{1}{2}$ lines. Rufo-fuscous, highly polished and smooth; head rather large, oblong, widest in front; eyes very small; antennæ 10-jointed, the club 2-jointed. Thorax deeply strangulated in the middle, the metathorax without spines. Abdomen truncate at the base; the petiole rather long, the first node elevated above the second, its lateral appearance wedge-shaped; the second node globose. The mandibles, antennæ, articulations of the legs and the tarsi pale rufo-testaceous.

Sub-family ATTIDÆ.

Genus ŒCODOMA, Latr.

1. *Œcodoma sexdentata*, Smith, Cat. Hym. pt. vi. (*Formicidæ*), p. 183, pl. x. fig. 15.

Formica sexdens, Linn. Syst. Nat. i. 964, 14.

Hab. Cayenne; Surinam; Para; Rio; S. America; St. Vincent's.

Of this insect Mr. Strange writes, "Umbrella ant; these ants have very large companies; they form beaten tracks through the thickest herbage, along which two crowds passing in opposite directions may always be seen. The one burdenless, the other each carrying a piece of leaf. I have seen trees quite stripped of their foliage by these ants. What do they use the leaves for? The larger individuals appear to exercise a kind of authority over the smaller ones and to do much less work."

Sub-family 4. CRYPTOCERIDÆ.

Genus Cryptocerus, Latr.

1. *Cryptocerus atrata*, Linn. Syst. Nat. i. 965, 16.

Hab. Monte Video; Rio Janeiro; Para; Quito; Cayenne.

2. *Cryptocerus minutus*, Fabr. Syst. Piez. p. 425, 5.

Family MUTILLIDÆ, Leach.

Genus Mutilla, Linn.

Mutilla Araneoides.

M. nigra, capite parvo, supra lateritio-flavo; thorace antice plagâ triangulari, postice maculis duabus transversis lateritio-flavis; abdomine maculis duabus dorsalibus albis, lineisque variis transversis interruptis-albis, ornato.

Female. Length $6\frac{1}{4}$ lines. Black and pubescent; the head above, a triangular patch on the thorax in front and an ovate spot on each side of the metathorax reddish-yellow; the cheeks have a cinereous pubescence; the head is narrower than the thorax; the legs have a thin glittering silvery-white pubescence; the spines and calcaria black. Abdomen, an interrupted narrow band on the posterior margin of the basal segment, two large ovate spots on the second, and an interrupted band on the third and fourth segments, of yellowish-white pubescence.

Mutilla xanthocerata.

M. aterrima, antennis rubro-flavis scapo nigro, capite magno atro, thoracis dorso maculis duabus transversis, lineis duabus longitudinalibus albis; abdomine supra nigro maculis duabus medianis albis; lineâque albâ anticâ interruptâ, maculisque duabus oblongis albis prope apicem.

Female. Length 10 lines. Black, pubescent; the head large, sub-quadrate, the eyes round and prominent; the flagellum orange-red. Thorax not so wide as the head, slightly narrowed posteriorly, with three obtuse teeth on each side before the middle; an oblique transverse silvery-white macula on each side in front, nearly uniting in the middle, and a longitudinal narrow white line on each side of the metathorax, the posterior margin of which is white; the legs have a cinereous villosity, the tibiæ furnished with several short black spines, the calcariæ at their apex pale testaceous. Abdomen: an interrupted silvery-white band on the basal segment, two circular white spots on the second segment, and a

broad interrupted white fascia on the third segment, which is continued beneath the abdomen; the lateral margins of the second segment beneath are silvery-white.

This is one of the largest and most handsome species in the genus. I cannot find that it has been previously described; it may possibly prove to be a local variety of *Mutilla eximia* of my own Catalogue of Fossorial Hymenoptera. It differs from the latter species in being larger, in not having golden pubescence on the face, in the scape being black and in the spots and markings being smaller or narrower; the teeth or spines on the sides of the thorax are smaller; still it may notwithstanding be nothing more than a local variety. *M. eximia* is from Bolivia.

Family POMPILIDÆ, Leach.

Genus Pompilus, Fabr.

1. *Pompilus anceps.*

P. cæruleo-niger; abdomine iridescente; alis cæruleo violaceoque splendide micantibus, apice albis.

Female. Length 11 lines. Black; the head and thorax with a beautiful changeable blue silky pile; the six apical joints of the antennæ orange-yellow; the metathorax transversely striated; the wings blackish-brown, with bright violet iridescence in certain lights; their extreme apex milky-white; the tibiæ and tarsi thickly set with short stout spines. Abdomen with a splendid blue iridescence.

Genus Pepsis, Fabr.

1. *Pepsis obscura*, St. Farg. Hym. iii. 490, 35.

Hab. S. America.

The insect from Panama agrees precisely with the description, excepting that the tips of the antennæ are yellow, which is not mentioned by St. Fargeau; still I am inclined to believe it is the same species, and probably the male of *P. elevata.*

Family SPHEGIDÆ, Leach.

Genus Sphex, Linn.

1. *Sphex dorsalis*, St. Farg. Hym. iii. 347, 20.

Hab. Ega; Santarem; Cayenne.

Of the habits of this species Mr. Stretch says, "From the sandy embankments of the railway at Arpinwall, it constructs a long burrow perpendicularly into the hard sand. I saw it bring a grasshopper as large as itself, with great difficulty, to the entrance

of its burrow; laying it down, it retreated, apparently to see that all was ready, and then, re-emerging, seized the grasshopper and backed into its hold."

Genus Monedula, Latr.

1. *Monedula signata*, Latr. Gen. Crust. et Ins. iv. 100.
   Vespa signata, Linn. Syst. Nat. i. 574, 14.

Hab. Brazil, S. America.

Group SOLITARY WASPS.

Family EUMENIDÆ, Westw.

Genus Montezumia, Sauss.

1. *Montezumia rufipes*, Sauss. Monog. Guêpes Sol. p. 89, 3, pl. 15, fig. 1.

Hab. Brazil.

Genus Odynerus, Latr.

Odynerus productus.

O. niger, capite thoraceque flavo-guttatis, et rude punctatis; abdomine fasciis duabus flavis ornatis.

Male. Length 3½ lines. Black, the head and thorax strongly punctured; the clypeus and a small spot above it, a minute one in the sinus of the eyes and another behind them, the scape in front and a spot on the mandibles, pale yellow; the flagellum fulvous beneath. The posterior margins of the prothorax, a spot beneath the tubercles, the tegulæ, post-scutellum, the metathorax behind and a spot on the anterior and intermediate tibiæ, yellow; the anterior tibiæ and tarsi ferruginous; the wings hyaline, with a dark fuscous stain in the marginal cell; a ferruginous spot on the tegulæ. Abdomen finely punctured, the first and second segments with a broad yellow margin, which is continued beneath; the second segment produced in the middle, forming a sharp angle or tooth; the following segments very narrowly bordered with yellow; the first segment entirely pale beneath.

Genus Eumenes, Latr.

Eumenes placidus.

E. niger, antennis subtus, prothorace, metathorace lateralibus, rufis; abdomine flavo-fasciato.

Male. Length 4¾ lines. Black; the antennæ ferruginous; the scape above and the flagellum in the middle above, fuscous; the clypeus, a minute spot above, another in the sinus of the eyes and

a narrow line behind them, yellow; the clypeus bidentate. Thorax, the prothorax and the metathorax at the sides, as well as the legs, ferruginous; a black spot on each side of the prothorax, its posterior margin narrowly yellow; the femora and tibiæ more or less fuscous above; the wings sub-hyaline, their anterior margin fuscous. Abdomen: the petiole ferruginous at the sides and apex; its apical margin, as well as that of the second segment and the middle of the posterior margin of the three following, yellow; the yellow margin of the second segment continued beneath the abdomen, which is ferruginous and has a dark stain in the middle of the second segment.

This species resembles the *Eumenes Uruguyensis* of Saussure and may possibly be its male.

Group SOCIAL WASPS.

Genus Polistes, Latr.

1. *Polistes Canadensis*, Sauss. Mon. Guêpes Soc. p. 72, 32.
   Vespa Canadensis, Linn. Syst. Nat. i. 952, 25.

Hab. North and South America; Brazil.

2. *Polistes annularis*, St. Farg. Hym. i. 522, 7.

Hab. North and South America; Brazil.

3. *Polistes versicolor*, Sauss. Mon. Guêpes Soc. p. 81, 44.

Hab. Brazil; Cayenne; St. Domingo.

Polistes modestus.

P. clypeo, mandibulis, antennarum basi, tibiis tarsisque anterioribus ferrugineis; oculorum orbitis, prothoracis margine posteriori, metathorace lineis duabus et segmentorum marginibus flavis.

Female. Length 6 lines. Black, the abdomen covered with a fine silky cinereous pile; the clypeus, mandibles, scape and four basal joints of the flagellum, ferruginous; a line on the lower portion of the inner orbits of the eyes and a line behind them pale yellow; the margins of the prothorax, the inner margin of the tegulæ, the post-scutellum and two longitudinal lines on the metathorax, yellow; the wings hyaline, the anterior margin of the superior pair slightly fulvous, with a fuscous stain in the marginal cell; the nervures pale ferruginous; the anterior tibiæ and all the

tarsi ferruginous, palest beneath. The basal segment of the abdomen with a narrow yellow border to its apical margin.

This species is closely allied to the *P. Acteon* and *P. liliaciosus* of Saussure's Monograph, but apparently distinct.

Genus Polybia, St. Farg.

1. *Polybia fuscicornis*, Sauss. Mon. Guêpes Soc. p. 210, 1; St. Farg. Hym. i. 539.

Hab. Brazil.

2. *Polybia fasciata*, Sauss. Mon. Guêpes Soc. 182, 21.

Hab. Panama.

3. *Polybia fastidiosuscula*, Sauss. Mon. Guêpes Soc. 197, 39.

Hab. Brazil.

4. *Polybia metathoracica*, Sauss. Mon. Guêpes Soc. p. 198, 41, pl. 25, fig. 1 (var. β).

Hab. Cayenne.

5. *Polybia pediculata*, Sauss. Mon. Guêpes Soc. p. 205, 50, pl. 26, fig. 7.

Hab. Brazil.

6. *Polybia simillima*.

P. nigra sub-sericea, alis sub-hyalinis, marginibus anterioribus fuscis.

Female. Length $5\frac{1}{2}$ lines. Black and thinly covered with a fine silky cinereous pile; the face shining, the clypeus produced in the middle, the anterior margin being angulated; the antennæ black, with the apex beneath testaceous; the legs black, with the claws rufo-testaceous; wings sub-hyaline, the anterior margin of the superior pair dark fuscous. Abdomen petiolated, campanulate; the rest of the abdomen cordiform.

This species is very like *P. socialis*, but its mandibles are black, its thorax somewhat broader and shorter, and the first segment is broader and the petiole shorter.

Genus Nectarina, Shuck.

1. *Nectarina analis*, Shuck. Cab. Cycl. Hist. Ins. p. 183.
Brachygaster analis, Perty, Del. An. Art. t. 28.

Hab. Brazil; S. America; Mexico.

Family ANDRENIDÆ.

Genus Halictus, Latr.

Halictus Hesperus.

H. capite thoraceque cupreo-nitidis, alis hyalinis, pedibus rufo-testaceis; abdomine nitido obscure ferrugineo.

Female. Length 3¼ lines. Head and thorax brassy, the head with tints of green, closely and finely punctured; the antennæ black, the flagellum fulvous beneath; the labrum and mandibles rufo-testaceous. Thorax shining, brassy on the disk, the metathorax green; wings hyaline, the nervures and tegulæ testaceous; the legs pale rufo-testaceous; the floccus on the posterior femora beneath, white. Abdomen shining and obscure fusco-ferruginous, the apial margins of the segments with pale pubescent fasciæ; beneath rufo-testaceous.

Family APIDÆ.

Genus Ceratina, Latr.

1. *Ceratina læta*, Spin. Ann. Soc. Ent. Fr. x. 138, 87.

This species has also occurred in Cayenne and at Ega.

2. *Ceratina punctulata*, Spin. Ann. Soc. Ent. Fr. x. 139, 89 (1841).

The specimens from Cayenne, described by Spinola, only differ from those from Panama in having a white spot on the labrum: I have little doubt of their identity.

3. *Ceratina eximia.*

C. capite thoraceque metallico-viridibus; abdomine purpureo, pedibus pallidis ciliatis.

Female. Length 4¼ lines. Head and thorax of a bright metallic green, and strongly and closely punctured; the flagellum obscurely rufo-piceous beneath; an oblong spot on the clypeus and a minute triangular one on each side, cream-coloured; the mesothorax with three longitudinal impressed lines in the middle, and an abbreviated one outside opposite the tegulæ; the wings sub-hyaline, the nervures and tegulæ ferruginous; the legs pale ferruginous, and thinly covered with cinereous pubescence; a minute spot at the apex of the anterior femora above, and a line on the tibiæ; also a minute spot at the extreme base of the posterior tibiæ, white. Abdomen bright purple, finely punctured, the three apical segments rugose.

2. *Ceratina placida.*

C. nigro-ænea punctata, clypeo macula alba ornato ; alis hyalinis.

Female. Length 3½-4 lines. Dark bronze colour, with tints of bright green on the head and thorax ; a triangular spot on the clypeus anteriorly, and a similar spot on each side of it touching the eyes, the latter sometimes continued up the inner orbit of the eyes, yellowish white ; a narrow line behind the eyes ; the head strongly and closely punctured ; the flagellum piceous beneath. Thorax strongly punctured, with a smooth shining space in the middle of the disk ; the mesothorax with three central smooth impressed lines, and an abbreviated one outside of them opposite the tegulæ ; the wings sub-hyaline, the nervures blackish ; the legs nigro-piceous ; a process in front of the anterior femora at their base, which is produced into an acute spine on each side. The abdomen strongly punctured, the three apical segments rugose ; beneath bright green. This species closely resembles, if it be not a local variety of, the *Ceratina punctulata* of Spinola, described in the "Annales de la Société Entomologique de France," 1841, p. 139.

Genus Chrysantheda, Perty.

1. *Chrysantheda nitida,* Perty, Del. An. Art. p. 148, tab. 28, fig. 8.

Genus Euglossa, Latr.

1. *Euglossa analis,* Westw. Nat. Libr. xxxviii. p. 262, pl. 19, fig. 2.
   Apis cordata, Linn. Syst. Nat. i. 955, 15 ?

This I believe is only a highly coloured and beautiful variety of the *E. cordata ;* every intermediate shade of colour occurs between specimens which are entirely green, and those with the abdomen of a fiery copper colour, the latter being the *E. analis* of Westwood.

2. *Euglossa cordata,* Latr. Hist. Nat. Crust. et Ins. iii. 384.
   Apis cordata, Linn. Syst. Nat. i. 955, 15.

Genus Trigona, Jurine.

1. *Trigona amalthea,* Latr. Gen. Crust. et Ins. iv. 183.
   Apis amalthea, Fabr. Syst. Piez. p. 371, 8.

2. Trigona mellarius.

T. nigra; antennis, mandibulis, scutello tarsisque ferrugineis, alis hyalinis.

Worker. Length 2 lines. Black; the head and thorax covered with strong confluent punctures; the face with a fine white downy pile; the mandibles, labrum and antennæ ferruginous. Thorax: the scutellum, tegulæ, tips of the femora and tibiæ, and the tarsi, ferruginous; the tubercles pale testaceous; the wings hyaline, the nervures rufo-fuscous; the scutellum with two pale teeth at its apex, and two pale minute spots at its base. Abdomen: smooth and shining; the apical margin of the second segment and the third and following segments more obscurely ferruginous; the apical segments covered with fine, short, pale golden pubescence; beneath obscure rufo-testaceous; the coxæ pale testaceous.

"A very large tree having fallen, it was cut in two to remove it; the inside was found to be quite hollow for many feet; the space thus left empty was completely lined with the nest of this small bee."

3. Trigona laboriosa.

T. nigra; capite lævi et nitido, antice pube argenteo vestito; thorace nitido, alis hyalinis, abdomine pallide rufo.

Worker. Length $2\frac{3}{4}$ lines. Head, thorax and legs black; the head very smooth and shining, the face and cheeks covered with a fine silvery pile; the antennæ rufo-testaceous beneath; the apex of the clypeus, the labrum and mandibles, more or less obscurely ferruginous; the vertex with some erect short black hairs. Thorax: smooth and shining, the disk with erect black hairs; the scutellum obscure rufo-testaceous; the metathorax smooth, shining, and rufo-piceous in the middle, the sides covered with cinereous pile; the wings hyaline, the nervures are rufo-fuscous at the base, and pale testaceous towards the apex of the wings, the stigma pale; the legs dark rufo-piceous, the tibiæ and tarsi densely covered with black pubescence; the legs are paler towards their base beneath, and the claw-joint of the tarsi also pale testaceous. Abdomen pale ferruginous, the base pale testaceous.

Genus Smiera, Spin.

Smiera captiva.

S. flava, nigro-maculata, alis hyalinis, antennis fuscis.

Female. Length 3 lines. Yellow; the flagellum rufo-fuscous;

tips of the mandibles ferruginous; the head and thorax strongly punctured; a black vase-shaped outline on the disk of the mesothorax, and a black line on each side; a transverse black line at the base of the scutellum, the latter with a pear-shaped spot in the middle, and an angular spot at its lateral margins; the pectus black at the base of the coxæ, and an oblong black spot beneath the wings; the wings hyaline; the apex of the posterior coxæ, a brown spot on the femora above, and two on their sides below; the femora incrassate, and armed with seven black teeth beneath; the base and apex of the tibiæ reddish brown. Abdomen petiolated; the margins of the segments narrowly bordered with reddish-brown, widening into spots at the sides and in the middle.

Genus Leptofœnus.

Head globose, deeply excavated above for the reception of the scape; antennæ 13-jointed, short and stout, shorter than the thorax, inserted in the middle of the face; the scape short, the two basal joints of the flagellum minute, the third joint rather longer than the scape, the 4—9 joints each in succession shorter than the preceding, the three apical joints minute, forming, as it were, a single compressed joint, but really composed of three. The thorax elongate; the prothorax prolonged into a neck; the wings without nervures, but with transparent traces of neuration very similar to that of the genus *Pelecinus*, the stigma distinct, the posterior margins of the wing fringed with short hairs; the legs elongate, slender, the posterior tibiæ thickened at their apex. Abdomen elongate, the first forming a petiole, the second longest; the ovipositor a little shorter than the abdomen.

This genus is formed for the reception of an insect which apparently unites in itself some of the characters of the genera *Fœnus*, *Megischus* and *Pelecinus;* it resembles the first in the shortness of its antennæ, *Megischus* in its globose head, and *Pelecinus* in the almost totally obliterated neuration of its wings.

Leptofœnus peleciniformis.

L. niger, alis hyalinis venis obsoletis, tibiis posticis apicis dilatatis.

Female. Length 9 lines, of the ovipositor 5 lines. Black and shining; the head with a few transverse striæ on the vertex; the ocelli in a curve; the face thinly covered with short glittering pale pubescence. The thorax transversely striated; the wings colourless hyaline and iridescent; the anterior and intermediate

legs very slender; the posterior coxæ stout, elongate, and transversely striated; the tibiæ slender, with their apex slightly thickened and pubescent; the tarsi pubescent, the base of the joints ferruginous. Abdomen: the petiole transversely striated; the following joints are smooth, shining, and have a chalybeous iridescence; the valves of the ovipositor black, the ovipositor ferruginous.

Genus Megischius, Brullé.

Megischus niger.

M. niger, alis hyalinis, abdominis segmento primo transversim striato; valvulis ovipositoræ ante apicem annulo albo.

Female. Length 9½ lines, of the ovipositor 11 lines. Black; head rugose in front, the vertex transversely striated, the cheeks smooth and shining. The thorax with large scattered punctures; the apex of the metathorax roughly punctured; the wings hyaline; the nervures black; the posterior femora with two stout spines or teeth beneath, and a number of minute ones between them. Abdomen: the first segment very finely striated transversely, the rest smooth and shining; the ovipositor broadly annulated with white a little before the apex.

IV. *Descriptions of the British Species of the Genus* Euplectus (*Family* Pselaphidæ). By G. R. Waterhouse, Esq., V.-P. Z. S., &c.

[Read Jan. 7th, 1861.]

Of the insects which until somewhat recently came under the head *Euplectus*, I am acquainted with ten British species. Two of these are now separated to form distinct genera, viz., *Eupl. Markelii* of Aubé's "*Révision de la Famille des Psélaphiens*," published in the Ann. Soc. Ent. de France, 2me Sér., ii. p. 142, formerly supposed by M. Aubé to be the *Pselaphus sulcicollis* of Reichenbach, which latter is, however, a much larger insect, more densely clothed with (shorter) pubescence, and more densely punctured, and hence is destitute of gloss, or nearly so. Of the *E. Markelii* are three specimens in Mr. Stephens's collection, where they stand, with other insects, to represent the *Bryaxis hæmaticus*. It is no doubt the same insect which Mr. Curtis describes (vol. vii. pl. 315) as *Bryaxis sulcicollis*. The insect now forms part of the genus *Trichonyx*, established by Chaudoir.

The second species which has, in modern times, been removed from the genus *Euplectus*, is the *E. brevicornis* of Denny = *Pselaphus brevicornis* of Reichenbach, which now forms part of Aubé's genus *Trimmium*. This insect appears to be rare with us. I have found but two specimens; one of these was taken at the root of an oak tree in Bishop's Wood, Hampstead; of the other the locality is not noted.

Of the genus *Euplectus*, as now restricted, the British species may be divided into three sections; and, indeed, are so divided by Aubé.

Sect. 1. *Thorax with a discoidal fovea, and three foveæ behind, the latter united by a transverse groove.*

1. *Euplectus Kunzei*, Aubé, Ann. de la Soc. Ent. de France, 2me Série, ii. p. 143, sp. 3. 1844.

Moderately elongate, and more depressed than the following species; rufo-testaceous, and finely pubescent. Head decidedly broader than the thorax; gradually rounded behind the eyes, which are small; the sides and back part punctured; the posterior foveæ large, somewhat shallow, and punctured; detached from the strong transverse anterior groove; the raised area behind narrow, and with a distinct fovea on the vertex. Antennæ

moderate. Thorax short, cordate; the lateral foveæ behind, large, the central one small; the transverse groove deep; the discoidal fovea oblong and small; the surface very finely, and by no means thickly punctured. Elytra rather paler than other parts; shorter than the head and thorax taken together; the sutural stria moderately impressed, and the stria about midway between this and the humeral hump, very short, not extending beyond the basal third of the elytra; the surface with scarcely any visible punctuation, even under a very strong lens. Abdomen broad and subdepressed; the two first (of the visible) segments each with a depressed area at the base in the middle, and this area bounded on each side by a slender groove; the two grooves diverging posteriorly.

Length 1 line.

I can perceive no distinctions indicative of sex in the only two specimens which have come under my notice. Both of these were found by me in Kent, one at Greenhithe and the other in Darent wood; the latter, in the sawdust of a recently felled oak.

This insect is readily distinguished from the following species by its superior size, combined with a rufo-testaceous colouring, the large size of the head, and its more depressed form. It seems to agree very well with M. Aubé's description of *E. Kunzei*, but in that description the comparatively large size of the head is not noticed, and hence some doubt may arise with respect to this identification.

2. *Euplectus Dennii.*

Eupl. sanguineus, Denny, Monographia Pselaphidarum, &c., p. 10, sp. 2. 1825?

Elongate, pitchy-black, glossy, and almost impunctate. Head gradually rounded and contracted behind the eye, which is rather large; the two anterior foveæ decidedly more widely separated than the posterior, and united by a strong transverse groove; they are likewise united with the posterior foveæ by two longitudinal grooves, and these diverge slightly as they approach the fore part of the head; * the area immediately above the eye, and the raised mesial area behind, are punctured; there is no distinct fovea on this raised part, but frequently a small depression at the back. Thorax about equal in length and width, distinctly contracted before and behind; the broadest part towards the

* I may here remark, that the posterior foveæ are only *distinct* when the head of the insect is away from the observer. When viewed (as is my usual custom in examining *Coleoptera*) with the head in the opposite direction, they appear to be confounded with the longitudinal grooves which unite them with anterior foveæ.

front, and here very nearly equal in width to the head, if we include the prominent eyes; the surface obscurely and sparingly punctured; the discoidal fovea, and the three posterior foveæ, are but moderately large and deep. Elytra, at the broadest part, about twice the width of the thorax, and about equal to the head and thorax in length; very finely and indistinctly punctured, with the ordinary sutural and central striæ, both having their origin at the base of the elytra in a small puncture; the central stria extends from the base, nearly half-way along the elytron, and between this and the sutural stria is a puncture or minute fovea * at the base of the elytron. Abdomen rather elongate, equal to the elytra in length.

Male with a small spur at the apex of the middle tibia on the inner side.

The first point which caught my eye, and led me to separate this species from the *E. nanus*, with which it agrees most nearly in colouring, was the superior length of the antennæ, and their being less stout; and a minute comparison readily brought to light many other points of distinction. The colour is usually darker (pitchy-black), and its form is more elongate. The head in *E. nanus* has its sides, immediately behind the eye, parallel, but the posterior angle is rounded, whilst in the present insect, which has a larger and more prominent eye, the head is gradually rounded and contracted behind the eye, and the space behind the eye is shorter: in *E. nanus* the four foveæ on the head are equidistant, whilst here the anterior foveæ are distinctly more widely separated than the posterior. The thorax is rather longer, and more contracted behind, and its foveæ are less strong. The striæ on the elytra are less strongly impressed, more especially at the base.

My specimens were procured from damp, rotting sticks, in a wood at Hawkhurst, in Kent, at the end of April, 1859. I have seen specimens in other collections.

In comparing this species with the *E. nanus* of Reichenbach and Aubé, I must state that that insect is universally regarded as the *E. Reichenbachii* of Leach and Denny, and that of this latter I have examined the original type specimen, now in the British Museum, which bears not only Leach's label, but likewise a second label ("*nanus*") attached by Dr. Schaum. In the same collection is found, likewise, the original specimen of the *E. Kirbii* of Denny, which is very distinct from the present species, and as these,

* In *E. nanus* the corresponding little fovea is confounded in the larger and deeper depression which forms the commencement of the central stria.

together with the *E. sanguineus*, are the only three dark species belonging to my first section, it would appear probable that the insect just described was the *E. sanguineus* of Denny; but the colouring as given by that author, both in his figure and description, in being paler than that of the *E. Reichenbachii* (= *E. nanus*), is at variance with my observations. The description then, in this respect, goes against the identification which I have made with a note of doubt, and I cannot perceive that there is any tangible character given by which the *E. sanguineus* could be distinguished either from the *E. Reichenbachii* or the *E. Kirbii:* it is true that in the description of the former the little fovea on the head is noticed (as it is likewise in Reichenbach's description), whilst with regard to the *E. sanguineus* there is no mention made of a foveola on the head, but then *E. Kirbii* has the foveola (more strongly marked) and it is not noticed. On the whole, I strongly suspect that the *E. sanguinea* of Denny will prove identical with the *E. Kirbii*, for the elongate form of the specimen ("*Kirbii*") in the British Museum, which seems to have influenced Denny in separating it as a species, is only accidental. According to the description given by M. Aubé, his *E. sanguineus* seems to differ in no respect from *E. signatus*, excepting in being rather larger, and of a darker colour. The author states that the insect is found in melon beds in company with *E. signatus*, and that he has doubts of its being distinct. These remarks cannot apply to the present species, but they apply very closely to the insect which I take to be *E. nanus*, in which the puncture on the crown of the head is indistinct, and sometimes scarcely traceable.

3. *Euplectus Kirbii*, Denny, Monogr. p. 14, pl. 2, fig. 1 (1825).
——— *Fischeri*, Aubé, Pselaphorum Monographia, p. 54, pl. 91, f. 3 (1833).
——— *Reichenbachii*, of Stephens's Collection.
——— *signatus*, of Stephens's Collection.

Pitchy-red, usually with the elytra of a darker colour than other parts; the dark colour, however, often confined to the hinder part of the elytra. About the same size as *E. nanus*, but differs somewhat in colouring; in having the head more rounded behind the eyes, the four foveæ on the crown less distinct, and indeed confounded with the longitudinal grooves which converge in front: the mesial triangular area behind is larger and prolonged more forwards, and, instead of the very minute foveola, there is here a distinct oblong depression, which indents the back edge of the head. The mesial stria on each elytron is more extended in the longitudinal direction, and both the striæ—this and the sutural

one—exhibit punctures throughout their length—a character not observed in *E. nanus;* the remaining portions of the elytra are, moreover, pretty thickly covered with very fine punctures. The legs and base of the antennæ are pale as usual. The male has the small terminal spur to the middle tibiæ as in several other species. The original specimen of *E. Kirbii*, of Denny, now in the Collection of the British Museum, is a little less dark in its colouring, and the vertical groove on the head is not quite so distinct as usual, but a very careful comparison has convinced me that it is identical with the insect, the leading characters of which I have attempted to point out. This specimen was, some years since, examined by Dr. Schaum, and pronounced to be the same as the *E. Fischeri* of Aubé, which identification appears to me to be correct, though I should be glad to learn whether the striæ on the elytra are furnished with a series of punctures in the *E. Fischeri*, and whether the head is gradually rounded and contracted behind the eye, and not subquadrate at that part as in several of the closely allied species. Furthermore *E. Fischeri* is described as "rufo-testaceus," the same term being applied to *E. Karstenii*, which is a much paler insect than *E. Kirbii* of Denny, which is dark rufous, with the elytra more or less pitchy.

4. *Euplectus nanus*, Aubé, Monogr. p. 53, sp. 2, tab. 91, f. 2.
——— *Reichenbachii* (Leach, Zool. Miscell. p. iii. 82), Denny, Monogr. p. 9, sp. 1, pl. 1. fig. 1.
——— ———, of Leach's Collection.
Pselaphus nanus, Reichenbach, Monogr. p. 69, t. 2, f. 20.
Euplectus Kirbii, of Stephens's Collection.

This is one of our commonest species, and is distinguished by its uniform pitchy-brown colour, combined with the presence of a very minute foveola on the vertex of the head, and other characters which have been pointed out in the preceding descriptions; the foveola on the head scarcely exceeds in size that of the punctures which may be seen in the region of the eyes. In having the part of the head behind the eye with the sides parallel for a short distance, and decidedly longer than the eye, it agrees most nearly with *E. signatus* and *E. Karstenii*. The male has a distinct spur at the apex of the middle tibia within.

Common in the neighbourhood of London; is found in stable-dung, the debris of haystacks, &c., and may sometimes be taken on the wing, near sunset, in considerable numbers, by sweeping over muck-heaps with a muslin net.

5. *Euplectus signatus*, Denny, Monogr. p. 13, sp. 4, pl. 1, fig. 4.
——— ———, Aubé, Monogr. p. 56, tab. 92, f. 3.
——— *Kirbii*, Aubé, l. c. p. 54, tab. 91, f. 4.
Pselaphus signatus, Reichenb. Monogr. p. 73, fig. 22.
Euplectus minutus, Stephens's Collection.

This species agrees most closely in its characters with *E. nanus*, but is usually rather smaller, and narrower, and always (I believe) of a testaceous colour. The four foveæ on the head are less distinct, being more completely confounded with the grooves which unite them, and the small foveola on the vertex is here wanting. The spur at the apex of the middle tibia of the male is less distinct, and indeed very minute.

Not uncommon in the neighbourhood of London.

6. *Euplectus Karstenii*, Denny, Monogr. p. 12, sp. 3, pl. 1, f. 3.
——— ———, Aubé, Monogr. p. 56, sp. 6, pl. 92, f. 2.
Pselaphus ———, Reichenb. Monogr. p. 71, t. 2, f. 21.
Euplectus sanguineus, (part) of Stephens's Collection.
——— *Karstenii*, of Stephens's Collection.

Agreeing with *E. signatus* in colour, and very nearly in size, I find this species most frequently confounded with that insect. The average size, however, is a trifle less than in *E. signatus*, and its form a little narrower; the head is relatively broader, being rather broader than the thorax, whilst in *E. signatus* the head is scarcely as broad as the following segment; the depressions are less strongly marked, the raised area between them is broader and extends more forwards, and the surface is more thickly punctured. The thorax is rather narrower, more distinctly punctured, and has the central posterior fovea smaller. I have found no distinct spur to the middle tibiæ in any of the specimens which I have examined, and they are pretty numerous.

Rather more plentiful in the neighbourhood of London than the preceding species, according to my experience; is found about cucumber-frames, and occasionally in the cellars of London. I possess a good series of specimens which were procured from a double-handful of fresh-mown grass, which was placed in one of my cellars as a trap for small *Coleoptera*. A single specimen found by me in the region of the nest of *Formica fuliginosa* is much larger than any others, being fully equal in size to the *E. nanus*.

Sect. 2. *Thorax with the three foveæ near the posterior margin united by a transverse groove; the discoidal fovea wanting.*

7. *Euplectus ambiguus*, Aubé, Monogr. p. 58, sp. 10, pl. 93, fig. 2.

Euplectus pusillus, Aubé, l. c. p. 59, sp. 11, pl. 93, fig. 3.
——— ———, Denny, Monogr. p. 15, s. 6, pl. 2, fig. 2.
——— ———, of Stephens's Collection.
——— *ruficornis*, of Stephens's Collection.

Scarcely equal to *E. Karstenii* in length, and distinctly narrower, and more linear in form than that insect; it is of a pitch colour, or pitchy-brown, finely pubescent and glossy, with the legs, base of the antennæ, and parts of the mouth testaceous. The head is fully as broad as the thorax, with a distinct fovea behind on the vertex, and two deep grooves commencing in two foveæ behind, and converging strongly towards the fore part of the head; the raised area in the region of the eye is punctured. The thorax is fully as broad as long, contracted behind, and broadest near the fore part; the angles obtusely rounded; the three foveæ behind are deep, and the central one is the largest; the transverse groove which unites them is also deep—there is no trace of a discoidal fovea; the surface is polished, and has minute scattered punctures. The elytra can scarcely be said to be punctured; they are about equal to the head and thorax in length, and about one-third broader than the thorax; the sutural stria is well marked, and external to this, at the base of each elytron, are two foveolæ, the outermost of which is not prolonged into a stria, as is generally the case. The male has the terminal spur to the middle tibia well developed.

I possess but two specimens of this species, taken by me many years since, I believe in the neighbourhood of London. It seems to be rare in cabinets.

Euplectus ambiguus, var.?

I possess a single specimen of an insect which agrees most closely in all its characters with the *E. ambiguus*, but which differs in having the head, thorax and elytra most thickly punctured and rugulose throughout; I cannot, however, but think it is an accidental variety.

Sect. 3. *Thorax with the three foveæ near the base isolated—not united by a transverse depression.*

8. *Euplectus bicolor*, Denny, Monogr. p. 17, sp. 7, pl. 2, fig. 3. 1825.
——— ———, of Stephens's Collection (♂).
——— ———, Aubé, Monogr. p. 57, sp. 9, pl. 93, fig. 1.
Pselaphus glabriculus, Gyll. Ins. Suec. iv. p. 236, 13. 1827?

Pitchy-black, with the legs and antennæ pale testaceous, shorter

and broader than other species, with the elytra and abdomen fully as broad, or even slightly broader than in *E. nanus;* the thorax rather smaller, and the head considerably less than in that insect. Head short, considerably narrower than the thorax, with two distinct foveæ behind, and a transverse groove in front; the eye very prominent, and the head rather suddenly contracted behind them; the penultimate and ante-penultimate joints of the antennæ rather larger than usual. Thorax about equal in length and width, strongly dilated rather anterior to the middle, and suddenly contracted near the front; with a moderate sized fovea behind, an oblong impression in front of this, and a longitudinal groove at some little distance from the lateral margin, extending from the anterior margin, and opening behind into the posterior lateral fovea; the surface is most indistinctly punctured, as is likewise that of the elytra. These latter are about twice as long and twice as broad as the thorax, rather convex, and gradually contracted towards the shoulders; the sutural stria is by no means strong, the mesial stria extends rather less than half-way along the elytra, and is deep and broad, especially at the base, and between this and the little foveola which forms the commencement of the sutural stria is a small oblong foveola. The middle tibia in the male has a large tooth-like process on the inner side about mid-way between the base and apex, the corresponding tibia is simple in the female.

This species seems to be very rare or local; I have seen but three specimens, a beautifully set male and female taken by Mr. Dossetor in the neighbourhood of London, and a male specimen in the collection of Mr. Stephens, from which the above description is taken.

It is remarkable that Gyllenhal should have overlooked the posterior lateral foveæ to the thorax of this insect, as well as the lateral longitudinal groove and the small discoidal groove, if this really be his *Psel. glabriculus*, as is generally supposed.

With regard to the above notes, I wish to state that I did not undertake to give an account of the British *Euplecti* because I was full of matter and had ample material, but because I was full of difficulties, and was anxious to point them out: it was necessary that I should examine the group with the view of determining the species for insertion in my catalogue, and in this work, I experienced much difficulty from the circumstance that the differential characters are often not pointed out: this want I have endeavoured to supply.

V. *Descriptions of New Species of Australian* Hymenoptera, *and of a Species of* Formica *from New Zealand.* By Frederick Smith, Esq., Pres. Ent. Soc.

[Read June 4th, 1860.]

The only species of ant which I have seen from New Zealand, excepting that described in the present paper, is the *Formica* (*Atta*) *antarctica* of White, in the Zoology of the Erebus and Terror; indeed, from inquiries that I have made of Dr. Sinclair and others who have long resided in that country, the *Formicidæ* appear to be insects extremely local or of rare occurrence in New Zealand. The species described in this paper derives its sole interest from the fact of its being the first true *Formica* that has been discovered; it was also the only species of ant forwarded by a relative, who undertook to collect the *Formicidæ* for me in the neighbourhood of Port Littleton. Amongst the *Hymenoptera* of Australia, the species of the genus *Pompilus*, and two of *Gorytes*, are, perhaps, as remarkable for their beauty and distinctiveness as any species belonging to those extensive genera. I have also added a new species to the rare genus *Paragia*. The fourteen new species of Australian bees, described in this paper, complete the enumeration of all that I am acquainted with from that country; six of these are in the collection of the British Museum, and for eight I am indebted to the liberality of John Lubbock, Esq.

Formica advena.

F. luteo-fusca, scapis antennarum pedibusque pallide testaceis; corporis pube sericea subtiliori; squama subovali, supra rotundata.

Female.—Fuscous-yellow, shining, covered with a thin fine cinereous pubescent pile; the flagellum slightly fuscous, with the tip pale; the anterior portion of the head and the mandibles paler than the vertex; the mandibles with fine acute teeth; a central impressed line runs upward from the clypeus to the middle of the vertex, terminating at the anterior ocellus, the ocelli minute. Thorax ovate. Abdomen fuscous, the scale of the peduncle incrassate, its superior margin rounded.

Length 2 lines.

Worker $1\frac{1}{2}$ lines. In general colouring, like the female, but paler, the thorax being pale testaceous like the legs.

Hab. New Zealand.

In my own Collection.

The only species of ants which I have seen from New Zealand are one belonging to the genus *Myrmica*, one forming the genus *Orectognathus*, and the species here described belonging to the genus *Formica;* it was found near Port Littleton by a relative of mine resident at that place.

Pompilus raptor.

P. niger, abdomine nitido, alis fuscis fasciâ ante apicem flavâ.

Female.—Black; the anterior wings with a broad yellow fascia near their apical margins. Head with the clypeus transverse, and, as well as the base of the mandibles, sprinkled with a few rigid setæ; the tips of the mandibles ferruginous; the face and cheeks covered with silvery pile. The sides of the thorax, the legs and metathorax with a silvery silky reflection; the posterior margin of the prothorax curved; the metathorax somewhat obliquely truncate; the tibiæ exteriorly, and the tarsi, thickly set with short acute spines; the thorax has a thin fuscous pubescence above, that on the sides and beneath is cinereous; wings dark fuscous, with an orange-yellow fascia on the anterior pair, the width of the marginal cell, and from thence crossing the wing nearly to its posterior border. Abdomen shining, with a bright silvery silky reflection beneath, and at the posterior lateral angles of the first and second segments.

Length 9 lines.

Hab. Australia. (The neighbourhood of Sydney.)

In my own Collection.

Pompilus molestus.

P. niger, pube cinereâ sericeâ vestitus, alis fuscis fasciis duabus flavis; antennis, tibiis tarsisque ferrugineis.

Female.—Black, and thinly covered with a silky cinereous pile; the antennæ ferruginous, with three or four of the apical joints black; the mandibles rufo-piceous at their apex; the vertex, and the pro- and mesothorax with rufo-fuscous reflection; the posterior margin of the prothorax curved; the tibiæ and tarsi dull, ferruginous and sparingly set with short acute spines; the wings fuscous, with two broad yellow fasciæ on the superior pair, their base sub-hyaline; the posterior wings sub-hyaline, with a fuscous

border at their apical margins. Abdomen slightly shining, covered with cinereous silky pile, which is most dense at the base of each segment.

Length 9 lines.

Hab. Australia (near Sydney).

In my own Collection.

Gorytes bellicosus.

G. niger, clypeo antennarum scapo subtus flavo, linea prothorace et subscutello segmentis duobus abdomineque rufo-flavis.

Female.—Black, slightly shining, and with two yellow fasciæ on the abdomen. Head rather narrower than the thorax; the clypeus, scape of the antennæ in front, and their apex, yellow; the anterior margin of the clypeus traversed by a groove, the groove black; the face with a short thin silvery pubescence; the vertex with a sparing pale fulvous pubescence. Thorax: the collar with a narrow interrupted yellow line; the suture at the base of the scutellum consute; the metathorax obtusely rounded, with a deep longitudinal central channel, the inclosed space at its base coarsely striated longitudinally, the sides rugose, and with a thin griseous pubescence; the wings sub-hyaline, with the anterior margin of the superior pair fuscous; the tibiæ and tarsi dull ferruginous, stout, and spinose; the anterior tarsi ciliated, the claw-joint enlarged, with the claws simple, and a large pulvillus produced between their fork. Abdomen: a sub-interrupted yellow fascia a little before the apical margin of the first segment; the second segment swollen at the sides, the third with a yellow fascia on its apical margin; the sixth segment ferruginous at the apex, shining, and faintly punctured.

Length 6½ lines.

Hab. Adelaide.

In my own Collection.

Gorytes eximius.

G. niger, clypeo antennarum scapo subtus flavo, abdomine fasciis tribus flavis, tibiis basi tarsisque ferrugineis.

Female.—Black; the abdomen with orange bands, the legs annulated with yellow and white. The clypeus, basal joint of the flagellum and the scape, yellow; the latter with a fuscous spot behind. The thorax closely punctured; a narrow yellow line on the collar, and the tegulæ yellow; an orange spot on the clypeus; the metathorax obtusely rounded and rugose; the inclosed space at its base longitudinally striated; the suture at the base of the

scutellum simple; the wings sub-hyaline, the anterior margin of the superior pair dark fuscous; the anterior tibiæ, tarsi and apex of the femora pale yellow, nearly white, the tibiæ and tarsi with a ferruginous stain outside; the intermediate legs are similarly coloured, but have also the tips of the joints of the tarsi dark-coloured; the posterior tibiæ are yellow at their base, the tarsi white, with the tips of the joints black. Abdomen: the first segment orange, with the extreme base black; the second segment with a broad orange fascia on its apical margin, slightly emarginate in the middle; the third segment with a narrower yellow fascia; the tip of the abdomen ferruginous.

Length $4\frac{1}{3}$ lines.

Hab. Australia (Adelaide ?).

In my own Collection.

Paragia deceptor.

P. nigra, aurantiaca multipicta; abdominis segmentis tribus flavo-fasciatis.

Female.—Black, variegated with orange-red. The head closely punctured; the anterior margin of the clypeus slightly rounded, with a large semi-circular orange spot at its base; a transverse subquadrate spot between the antennæ, and a minute line behind the eyes, orange. Thorax somewhat square in front, the anterior margin slightly curved; the prothorax orange in front, slightly interrupted in the middle; a spot beneath the wings, a short, narrow line over the tegulæ, an oblong spot in the middle of the mesothorax, extending to the base of the scutellum, and the latter, orange-red; the metathorax truncate, the truncation finely rugose, with the lateral margins narrowly orange; the tibiæ and tarsi orange-red, the tarsi palest. Abdomen silky, particularly so beneath; the first segment with a minute spot on each side, the second with a broad band at its base, the third with a similar band at its apical margin, the fourth with a narrow band also at its apical margin, orange-red; the band on the second segment is emarginate in the middle, and also on each side of its basal border; the apical margin of the fifth segment and the sixth entirely rufo-piceous. The wings sub-hyaline, with the anterior border of the superior pair dark fuscous.

Length 6 lines.

Hab. Australia.

In my own Collection.

This species closely resembles the *P. Australis* of Saussure, but I think the differences warrant their separation: an extensive series might prove it to be an extreme variety.

Fam. ANDRENIDÆ, Leach.

Genus Lamprocolletes, Smith.

1. *Lamprocolletes venustus.*

Female.—Black, the abdomen with a silky gloss. The face densely clothed with long, pale golden-coloured pubescence, that on the cheeks is white; the scape of the antennæ ferruginous; the labrum and mandibles rufo-testaceous, the latter rufo-piceous at their apex. Thorax thinly clothed above with pale ochraceous pubescence, on the sides and beneath it is nearly white; the tips of the femora, the tibiæ and tarsi ferruginous. Abdomen: the margins of the segments with narrow fasciæ of a golden lustre, and thinly sprinkled with pale hairs.

Length $4\frac{1}{2}$ lines.

South Australia—Lower Plenty.

In the Collection of the British Museum.

2. *Lamprocolletes cladocerus.*

Male.—Black, shining, and finely punctured, the pubescence griseous and most dense on the face and thorax; that on the latter is beautifully plumose, resembling downy feathers; on the face it is nearly white; the antennæ bipectinate, that is, with a double row of teeth, two on each joint; each tooth has two or more teeth or branches within, all the teeth fringed with erect hairs. The wings hyaline and iridescent, the nervures dark brown; the legs obscurely testaceous, the claw-joint of the tarsi pale, the claws bifid, the calcaria white. Abdomen shining, and having an obscure æneous tinge; the margins of the segments depressed and obscurely rufo-piceous.

Length $4\frac{1}{4}$ lines.

Hab. Australia—Sydney.

In the Collection of the British Museum.

This species is at present unique in the National Collection; it is certainly the most remarkable bee that I have seen, and the only instance, to my knowledge, of a bee having pectinated antennæ; such an occurrence, indeed, in the Aculeate *Hymenoptera* is only known in two or three instances, as in *Psammotherma flabellata* amongst the *Mutillidæ*, and again in *Ctenocerus Klugii* in the *Pompilidæ*; there is also a modification of it in one or two other species of *Pompilidæ*.

Genus Euryglossa, Smith.

1. *Euryglossa ephippiata.*

Female.—Head and thorax black, the latter blood-red above; the abdomen nigro-æneous. The head closely and finely punctured; the clypeus shining, with scattered punctures; the mandibles with their apex rufo-piceous, rounded at the tips, not toothed. The thorax above, the scutellum and post-scutellum red; the wings fusco-hyaline; the nervures black. Abdomen of a dark olive-green, with an obscure silky gloss.

Length 4¼ lines.

Hab. Adelaide.

In the Collection of the British Museum.

2. *Euryglossa bicolor.*

Female.—The head and thorax black, the abdomen red. The head and thorax shining, finely and distantly punctured; the face and vertex with a thin, pale golden-coloured pubescence, that on the cheeks cinereous. The wings sub-hyaline, their nervures pale testaceous. The abdomen ferruginous, with the base and a transverse waved stripe across each segment fuscous.

Length 4 lines.

Hab. Adelaide.

In the Collection of the British Museum.

Genus Dasycolletes, Smith.

Dasycolletes rubellus.

Female.—The head and thorax black, and clothed with beautiful plumose pubescence; the clypeus strongly punctured and shining; the head opaque, and finely and longitudinally rugose. Thorax slightly shining, very closely and delicately punctured, with stronger scattered punctures intermixed; the scopa on the posterior tibiæ silvery-white beneath and fuscous above; the legs obscure rufo-fuscous, and clothed with glittering pale pubescence; the wings hyaline and iridescent, the nervures testaceous, the costal nervure nearly black. Abdomen ferruginous; its apical segment black; the apical margin of the fifth segment and the sides of the sixth with sooty-black pubescence: the margins of the segments beneath fringed with pale pubescence.

Length 4½ lines.

Hab. South Australia—Lower Plenty.

In the Collection of the British Museum.

Genus Anthoglossa, Smith.

Anthoglossa sericea.

A. nigra, thorace pedibusque pallide fulvescente tectis, segmentis abdominis apice pallide testaceo late fasciatis.

Female.—Black; the sides of the face with a line of snow-white pubescence, on the vertex it is slightly fuscous; the anterior margin of the clypeus and the mandibles rufo-piceous, the tips of the latter black; the flagellum fulvous beneath. The thorax densely clothed with short pale pubescence on the disc, on the sides and beneath it is cinereous; the tibiæ and tarsi rufo-piceous, their pubescence pale fulvous; the wings sub-hyaline, the tegulæ pale testaceous. Abdomen subovate and covered with a short changeable reddish pile; the apical margins of the segments narrowly testaceous; the fifth segment fringed with fulvous pubescence, as well as the sides of the sixth; the segment itself being rufo-testaceous.

Length 5 lines.

From the Collection of J. Lubbock, Esq.

Genus Prosopis, Fabr.

Prosopis metallicus.

P. nigro-cærulea, nitida et delicatule punctata, faciei scutello et post-scutello flavis.

Female.—Black; the clypeus and face on each side bright yellow. Thorax closely and finely punctured; the tubercles, scutellum and post-scutellum yellow; wings slightly smoky, the nervures black; the two recurrent nervures uniting with the two transverse cubital nervures. Abdomen: obscurely nigro-æneous, very finely and closely punctured.

Length 3½ lines.

Male.—Shining nigro-æneous; the clypeus, the face on each side of it, an angular spot above the clypeus and the scape in front cream-coloured. Thorax closely and finely punctured; a large spot beneath the wings, the scutellum and post-scutellum bright yellow; wings sub-hyaline and iridescent, the nervures piceous, the stigma pale testaceous; the anterior tibiæ in front, a line on the femora outside near their apex, a line in front of the intermediate and posterior tibiæ and femora, yellow. Abdomen finely and closely punctured; the apical segments beneath fringed with black pubescence.

Hab. Australia.

From the Collection of J. Lubbock, Esq.

Genus Nomia, Latr.

Nomia argentifrons.

N. nigra; capite thoraceque punctatis subopacis, faciei pube argentata; abdomine nigro-cœruleo, segmentis apicalibus albo-marginatis.

Head, thorax and legs black, the abdomen black; the scape of the antennæ in front, the apex of the clypeus, the mandibles and anterior tibiæ in front pale rufo-testaceous, the flagellum fulvous beneath; the claws of the tarsi testaceous; the face, cheeks and hinder margin of the vertex clothed with white pubescence; the thorax on the sides and the sutures of the scutellum white; wings hyaline, faintly clouded at their apical margins, the nervures black, the posterior femora incrassate, the tibiæ incrassate and broadly expanded at their apex. Abdomen: the apical margin with white fasciæ, the first broadly interrupted.

Length 4 lines.

Hab. Australia.

From the Collection of J. Lubbock, Esq.

Genus Andrena, Fabr.

Andrena advena.

A. nigra glabriuscula; abdomine nitido fasciis interruptis albis; scopa versicolori.

Female.—Black, the face and cheeks with cinereous pubescence, that on the vertex fuscous; the clypeus strongly punctured. Thorax: the sides and beneath thinly clothed with cinereous pubescence, that on the disc and on the scutellum fuscous; the posterior tibiæ have the scopa fuscous; wings hyaline and iridescent, the nervures black. Abdomen: oblong-ovate, the second, third and fourth segments with a narrow white marginal fascia, the apical fimbria black.

Length $5\frac{3}{4}$ lines.

Hab. Australia.

From the Collection of J. Lubbock, Esq.

Genus Scrapter, St. Farg.

1. *Scrapter carinata.*

S. capite thoraceque nigris, abdomine ferrugineo apice nigro.

Female.—Head, thorax and legs black, smooth and shining; the clypeus rounded in front, and with a sharp, elevated carina down the centre; the flagellum rufo-piceous beneath. Thorax:

wings hyaline and iridescent, the tegulæ rufo-testaceous; the tibiæ and tarsi obscure rufo-piceous, the anterior tibiæ pale in front. Abdomen ferruginous; the apical margin of the first segment slightly fusco-ferruginous, the second more broadly so; the following segments entirely fusco-ferruginous.

Length $3\frac{1}{4}$ lines.

Hab. Australia.

From the Collection of J. Lubbock, Esq.

2. *Scrapter bicolor.*

S. capite thoraceque nigris, abdomine ferrugineo basi nigro, alis hyalinis.

Female.—Head and thorax black; abdomen ferruginous, with the base fuscous; a fuscous spot in the middle of the three following segments at their extreme lateral margins. The flagellum obscurely fulvous beneath; tips of the mandibles ferruginous; the clypeus with scattered punctures; the tibiæ and tarsi ferruginous, and thinly covered with cinereous pubescence.

Length 4 lines.

Hab. Australia.

From the Collection of J. Lubbock, Esq.

Fam. APIDÆ, Leach.

Genus Megachile, Latr.

1. *Megachile ustulata.*

M. nigra, abdomine pube ferrugineâ vestito, alis fuscis.

Female.—Head, thorax and legs clothed with black pubescence, the face on each side of the clypeus with cinereous pubescence, the clypeus broadly truncate; the mandibles stout, rugose and opaque black; wings fuscous, darkest along the anterior margin of the superior pair; the intermediate and posterior tarsi clothed with fulvous pubescence; the abdomen clothed above and beneath with bright fulvous pubescence, longest and palest beneath.

Length $6\frac{3}{4}$ lines.

Hab. Australia.

From the Collection of J. Lubbock, Esq.

2. *Megachile senex.*

Female.—Black, shining and finely punctured; the head anteriorly, the cheeks, the thorax on the sides aud beneath, as well

as the legs, clothed with cinereous pubescence; the clypeus more strongly punctured than the rest of the body, its anterior margin emarginate; the mandibles very stout and bidentate. The wings smoky, darkest at their apical margins, with the nervures black; the spines at the apex of the tibiæ and the claws of the tarsi rufo-testaceous, the tips of the latter black; the tibiæ have exteriorly a short fuscous pubescence, on the tarsi within it is fulvous. Abdomen with shades of violet and green, without marginal fasciæ, and clothed beneath with bright fulvous pubescence.

Length $5\frac{3}{4}$ lines.

Hab. Australia, Richmond River.

In the Collection of the British Museum.

Of this very marked and easily distinguished species there are two specimens in the Museum, which are in the finest possible condition; the absence of abdominal fasciæ is unusual in this genus.

3. *Megachile modestus.*

Female.—Black; very closely and finely punctured and sub-opaque; the sides of the face, the thorax on the sides and beneath, and a little tuft behind the tegulæ, white; wings sub-hyaline; the legs thinly covered with white pubescence. Abdomen: the posterior margin of the segments with narrow white fasciæ; the apical segment with short, pale fulvous pubescence, beneath clothed with white pubescence.

Length $4\frac{1}{2}$ lines.

Male.—Closely resembles the female, but has the two basal joints of the anterior tarsi white, flattened and expanded; the terminal segment of the abdomen truncate at the apex, with a minute tooth at the extreme base of the lateral margins.

Length $4\frac{3}{4}$ lines.

Hab. Australia.

From the Collection of J. Lubbock, Esq.

VI. *On the Comparative Influence of Periodicity and Temperature upon the Development of Insects.* By M. C. Verloren, Med. Doc., Utrecht. Communicated by Professor Westwood, M.A., F.L.S., &c.

[Read 6th August, 1860.]

Periodicity is an essential property of all organic being; animals and plants having, within fixed limits, a determined time of existence, growth and decay. In insects and plants this periodicity is more expressed than in other classes of the organic creation; in the majority of species the different periods of development are fixed to definite times of the year, differing, however, in different species.

It is generally known that temperature has great influence upon periodicity. The experiments of Reaumur, in retarding or advancing the time of appearing of some insects, are sufficiently known; and Lacordaire has mentioned an observation, where out of 100 pupæ of *Saturnia Paphia*, two-thirds came out after fourteen days (the ordinary time of pupation), and the other one-third at different times during ten subsequent months; showing that in that case the time of the year was without influence.

But there are species in which the periodicity is only determined by the time of the year, and where temperature has no influence thereupon. Swammerdam and Reaumur have already made observations upon this subject. Swammerdam says, that his *Ephemera Swammerdamii* always appears during three to four days within the fourteen days between the feasts of St. Olof and St. John; and Reaumur states that another species of *Ephemera*, inhabiting the Seine, always appears during two or three days between the 10th and 18th of August, adding that neither cold nor rainy days had any influence thereupon.

Besides this annual periodicity there is also a daily one. The *Ephemera* of Swammerdam, according to his statement, appears always between the hour of 6 and 6.30 in the evening, and has disappeared totally before 11 o'clock; and Reaumur states of his *Ephemera*, that it appears always between the hour of 8 and 8.30 in the evening, and has disappeared at 10 o'clock. Brahm has stated that *Bombyx Mori* and *Macroglossa Œnotheræ* leave the pupa only at sunrise, *Smerinthus Tiliæ* at noon; and Schroeter states that sixteen specimens of *Acherontia Atropos* left the pupæ

between 4 and 7 in the evening, which has been proved by experiments of my own.

To determine this more accurately it is necessary to make observations on a great number of individuals. During several years I have made them upon *Sphinx Ligustri*, and I have obtained very curious results, showing evidently an influence determined only by the time of the year, without any influence of the temperature. The perfect moths do not always come out in the following year, but some remain in the pupa to the second year. The time of coming out is ordinarily the last half of June ; those which have not come out at that time remain to the following year. In July and August a sufficiently high temperature is developed, but it is without influence, if their determined time has passed, and they remain to the following year, when they come out precisely at their determined time in June, simultaneously with those which have undergone their transformation to the pupa in the preceding September.

During the years of 1844—1852, out of 236 pupæ 182 came out in the year subsequent to their pupation, 40 in the second year, and 14 died; thus 18 per cent. of the whole number of pupæ remain to the second year.

The mean time of coming out has been found to be the 21st of June, and the limits of appearance the 4th of June and the 19th of July. The year 1851 was especially backward, and the latest limit of the 19th of July occurred in that year, whilst the first specimen came out in that year on the 25th of June. The year 1848, on the contrary, was the most forward, and the moths appeared from June 4th to June 26th. As stated before, the two-year brood came out in every year exactly at the same time as the one-year brood. [*See* Table *opposite*.]

In the one-year brood the males have always been about a week in advance; in the two-year brood no marked difference could be observed in this respect. Although it seems to be the rule, that in most insects the males precede the females, there are also instances where the reverse is the case. Out of twenty pupæ of *Psyche nitidella* which I reared, ten females came out between the 14th and 20th of June; the following week not one came out; and after that time only males were developed. During the past year I made observations upon a certain number of pupæ of *Papilio Machaon* with the like result.

The general relation between the number of males and females of *Sphinx Ligustri* which I reared was, as 53·85 per cent. ♂ to 46·15 ♀; but between the one and two-year brood the prepon-

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I.

N.			TOTAL.								
1851.	1852.		One Year.			Two Years.			Total.		
♀ Total.	♂ ♀ Total.		♂ ♀ Total.			♂ ♀ Total.			♂ ♀ Total.		
– –	– – –		1 – 1			– – –			1 – 1		
– –	– – –		2 – 2			– – –			2 – 2		
– –	– – –		4 – 4			– – –			4 – 4		
– –	– – –		4 – 4			– – –			4 – 4		
– –	– – –		4 – 4			– – –			4 – 4		
– –	– – –		1 1 2			– – –			1 1 2		
– –	– – –		2 – 2			– 1 1			2 1 3		
– –	– – –		1 2 3			– – –			1 2 3		
– –	– – –		2 – 2			– – –			2 – 2		
– –	– – –		1 – 1			– – –			1 – 1		
– –	– – –		4 1 5			– 1 1			4 2 6		
– –	– – –		2 – 2			1 2 3			3 2 5		
– –	– – –		1 2 3			1 – 1			2 2 4		
– –	– – –		3 4 7			2 – 2			5 4 9		
– –	– – –		2 2 4			– 2 2			2 4 6		
– –	– 1 1		4 6 10			3 3 6			7 9 16		
– –	– – –		2 5 7			– 1 1			2 6 8		
– –	– 1 1		1 3 4			– 4 4			1 7 8		
– –	– 1 1		– 3 3			– 2 2			– 5 5		
– –	– – –		1 1 2			– – –			1 1 2		
– –	– 1 1		4 1 5			2 2 4			6 3 9		
– –	– – –		5 1 6			1 – 1			6 1 7		
– –	– – –		4 2 6			– – –			4 2 6		
– –	– – –		– – –			1 1 2			1 1 2		
– –	– – –		5 – 5			– – –			5 – 5		
– –	– – –		1 1 2			– – –			1 1 2		
– –	– – –		2 3 5			– – –			2 3 5		
– –	– – –		– 1 1			– – –			– 1 1		
– –	– 1 1		– 1 1			– 1 1			– 2 2		
– –	– – –		1 1 2			– – –			1 1 2		
– –	– – –		– 1 1			– – –			– 1 1		
– –	– – –		– – –			– 1 1			– 1 1		
– –	– – –		1 1 2			– – –			1 1 2		
– –	– – –		1 1 2			– – –			1 1 2		
– –	– – –		– 1 1			– – –			– 1 1		
– –	– 5 5		66 45 111			11 21 32			77 66 143		

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PUPATION OF *SPHINX LIGUSTRI.*

	One Year's Pupation.												Two Years' Pupation.												Total.								
	1848.			1849.			1850.			1851.			1848.			1849.			1850.			1851.			1852.			One Year.			Two Years.			Total.		
	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.	♂	♀	Total.
June 4 ..	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	1	–	1
„ 7 ..	2	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	–	–	2	–	2
„ 8 ..	4	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	4	–	–	–	4	–	4
„ 9 ..	4	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	4	–	–	–	4	–	4
„ 10 ..	3	–	3	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	4	–	–	–	4	–	4
„ 11 ..	–	1	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	1	1	2
„ 12 ..	1	–	1	1	–	1	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	1	1	2	1	3
„ 13 ..	–	2	2	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	3	–	–	–	1	2	3
„ 14 ..	–	–	–	1	–	1	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	–	–	2	–	2
„ 15 ..	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	1	–	1
„ 16 ..	1	–	1	1	–	1	–	–	–	–	–	–	2	1	3	–	–	–	–	1	1	–	–	–	–	–	–	4	1	5	–	1	1	4	2	6
„ 17 ..	–	–	–	2	–	2	–	–	–	–	–	–	–	2	2	–	–	–	1	–	1	–	–	–	–	–	–	2	–	2	1	2	3	3	2	5
„ 18 ..	–	1	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	1	2	3	1	–	1	2	2	4
„ 19 ..	–	2	2	2	1	3	1	–	1	–	–	–	–	1	1	–	–	–	2	–	2	–	–	–	–	–	–	3	4	7	2	–	2	5	4	9
„ 20 ..	–	–	–	–	2	2	1	–	1	–	–	–	1	–	1	–	–	–	–	2	2	–	–	–	–	–	–	2	2	4	–	2	2	2	4	6
„ 21 ..	–	2	2	1	–	1	3	3	6	–	–	–	–	1	1	1	1	2	–	1	1	2	–	2	–	–	–	–	1	1	4	6	10	3	3	6	7	9	16
„ 22 ..	2	2	4	–	–	–	–	2	2	–	–	–	–	1	1	–	–	–	–	1	1	–	–	–	–	–	–	2	5	7	–	1	1	2	6	8
„ 23 ..	–	2	2	1	–	1	–	–	–	–	–	–	–	1	1	–	–	–	–	2	2	–	–	–	–	1	1	1	3	4	–	4	4	1	7	8
„ 24 ..	–	1	1	–	1	1	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	1	1	–	3	3	–	2	2	–	5	5
„ 25 ..	–	–	–	–	–	–	–	–	–	1	–	1	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	1	1	2
„ 26 ..	–	1	1	–	–	–	–	–	–	3	–	3	1	–	1	2	–	2	–	–	–	–	1	1	–	1	1	4	1	5	2	2	4	6	3	9
„ 27 ..	–	–	–	–	1	1	–	–	–	5	–	5	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	5	1	6	1	–	1	6	1	7
„ 28 ..	–	–	–	–	2	2	–	–	–	4	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	2	6	–	–	–	4	2	6
„ 29 ..	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	1	1	2	1	1	2
„ 30 ..	–	–	–	–	–	–	–	–	–	5	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	5	–	–	–	5	–	5
July 1 ..	–	–	–	–	–	–	1	–	1	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	1	1	2
„ 2 ..	–	–	–	–	–	–	–	–	–	2	3	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	3	5	–	–	–	2	3	5
„ 3 ..	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	1	1
„ 5 ..	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	1	1	–	1	1	–	2	2
„ 6 ..	–	–	–	–	–	–	1	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	1	1	2
„ 11 ..	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	1	1
„ 14 ..	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	1	1	–	1	1
„ 16 ..	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	1	1	2
„ 18 ..	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–	1	1	2
„ 19 ..	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	1	1
	18	14	32	13	8	21	8	6	14	22	9	31	5	8	13	5	6	11	–	2	2	6	8	14	–	–	–	–	5	5	66	45	111	11	21	32	77	66	143

derange in number of the sexes was reversed; in the one-year brood it was as 59·46 per cent. ♂ to 40·54 ♀; and in the two-year brood as 34·375 per cent. ♂ to 65·625 ♀. This fact is easily to be explained by the above-mentioned fact of the earlier development of the males of the one-year brood; the females coming out the latest, there is a greater chance for them than for the males to become a two-year brood.

I have also to note another remarkable fact upon this two-year brood, viz., the numerical proportion of this brood in alternate years. Thus, the even years, 1844-46-48-50, produced ninety-three of one-year brood and thirty-seven of two-year brood; but the uneven years, 1845-47-49-51, produced eighty-nine of one-year brood and only three of two-year brood. The number of my observations is certainly too small to state this fact positively, but it seems to me sufficiently marked for calling attention to this fact.

The differences in advancing or retarding the time of coming out in the month of June and the first days of July are certainly occasioned by differences of temperature, principally in the month of May. In the first warm days in the month of May the pupæ receive an impulsion by which the proper formation of the perfect insect in the pupa case is set in action. Those which resist this impulsion remain to the following year; thus the periodicity of the species prevails over the influence of the temperature.

Further experiments are in accordance with this view. The pupa state in insects is best adapted for physiological experiments on the transformation of matter in animals. They live and employ matter like other animals, but take no additional food. Their food is deposited in their bodies in the adipose tissue, accumulated during the larva state. The larva eats not only for itself, but also for the future pupa, which is not able to take food from without. Hence it is not necessary to take into account the food consumed by the animal (as would be required in experiments with the larva), whereby such experiments are much facilitated. I therefore commenced by making a series of calculations of the weights of the pupæ at different times. The loss can thus only represent the loss by respiration, and the amount of the loss will represent the activity of the vital functions. I cannot detail *in extenso* all the points connected with the researches which I have made, and will, therefore, only give some of the results. First, the mean loss sustained by the insects from April to the time of their appearance in the perfect state, calculated for the early period in series of ten days' duration, and subsequently from day

to day during the few days preceding the development of the imago: 1o, in the males of the one-year brood; 2o, in the females of the one-year brood; 3o, in the female of the two-year brood (calculated in the second year); 4o, in a single individual calculated in the first year, but which did not appear till the following year; and 5o, in pupæ which died, as became apparent by the far greater loss in weight than in those which were alive, so that in the living ones there must exist a power of resistance against the loss occasioned by the evaporation of the matter.

The amounts of loss of weight are given in milligrammes; about 4,000 milligrammes being the mean weight of the pupæ.

	Mean in Ten Days.									Daily Loss.									
	To 9 April.	To 19 April.	To 29 April.	To 9 May.	To 19 May.	To 29 May.	To 8 June.	To 18 June.	To 28 June.	June 29.	June 30.	July 1.	July 2.	July 3.	July 4.	July 5.	July 6.	July 7.	
I.	6	12	11	17	50	64	66	70	—	11	11	9	10	10	10	11	13	—	85 in 8 days.
II.	7	12	14	16	40	58	59	75	—	7	7	11	11	10	8	12	13	11	90 „ 9 „
III.	6	7	10	13	34	43	56	63	77	10	8	8	8	13	10	10	12	—	79 „ 8 „

	Mean in Ten Days.									
	To 8 July.	To 18 July.	To 28 July.	To 7 Aug.	To 17 Aug.	To 27 Aug.	To 6 Sept.	To 16 Sept.	To 26 Sept.	To 6 Oct.
IV.	15	24	17	24	13	14	11	14	9	—
V.	145	196	171	177	135	138	140	124	69	58

It is to be seen that in I., II. and III., the impulsion had been given in the days between the 9th and 19th of May, marked

by the great augmentation in the loss of weight, which after that time continued still to increase. In No. IV. that augmentation is not perceptible; the loss of weight increases a little until the 7th of August, but after that time it again decreases. This increase and decrease in the amount of the loss is naturally explained by the rising of the temperature, but it is not so much as it should be, if the impulsion were given for the formation of the perfect insect. In No. V., on the contrary, the loss is at all times enormously greater, showing, as I have remarked, the influence of the loss of life. As I commenced my observation of these weights only last year, and only females came out of the two-year brood pupæ in that year, I have not obtained the weights of males of the two-year brood.

The loss of weight has been found to be greater in the males than in the females, showing a more extensive consumption of matter by the males than by the females. In the last sixty-six days before coming out of the pupæ, the mean loss per cent. on the weights of the pupæ (on the sixty-sixth day before they came out) was in the one-year brood of males, 8·48; in the one-year brood of females, 7·59; and in the two-year brood of females, 7·64.

The loss by respiration is, of course, also accompanied by urinary secretions, consisting of the solid and fluid remaining parts of the matter consumed during the pupa state. This secretion is accumulated during the pupa state in a vesicular enlargement of the rectum. The perfect insect frees itself by the discharge of this mass in leaving the pupa case, and if the pupæ are fixed in an upright position before the moths come out, the whole quantity is generally left in the pupa case. It would be too long to explain all the precautions taken to determine exactly the quantity of urinary secretion during the pupa state, and I will give only the ultimate results, showing also the greater amount of matter consumed by the male pupæ. The correspondence of the numbers of the different groups will, as I hope, speak sufficiently in favour of the accuracy of the results. The mean quantity of urinary secretion, during the whole time of the pupa state, has also been expressed by the per-centage on the weights of the pupæ, calculated on the sixty-sixth day before the day the perfect insects emerged, as follows:—

In males of the one-year brood	45·89
In females ,, ,, ...	31·76
In females of the two-year brood	35·64

I have also taken the weights of the perfect insects. I will not, however, mention all the precautions necessary to obtain accurate

results. I will only give one of the results, showing the difference in the quantity of loss between the days and the nights, which was much greater during the nights than during the days, and also greater in the males than in the females.

	Day.	Night.
Mean loss of the ♂ insect	5·333	12·925
„ „ ♀ „	5·763	9·969

The following table will also give the hours of the day in which the insects have come out of the pupæ, showing that the great majority come out in the morning or before one o'clock in the afternoon, contrasting strongly on this point with *Acherontia Atropos*, which we have observed to come out always in the evening:—

Out of 94 specimens of *Sphinx Ligustri*, there have

come out before	9	o'clock	in the morning	19	specimens.
„	„ 10		„ „	16	„
„	„ 11		„ „	10	„
„	„ 12		„ „	10	„
„	„ 1		„ afternoon	15	„
„	„ 2		„ „	6	„
„	„ 3		„ „	9	„
„	„ 4		„ „	5	„
„	„ 5		„ „	1	„
„	„ 6		„ „	2	„
„	„ 7		„ „	1	„
				94	

Lastly, I will remark that M. Vilmorin made some observations before the French Academy of Sciences on the 21st March, 1859, stating facts of the same kind in plants as I have described in insects. It is sufficiently known that plants can be advanced in their development by putting them in hot situations. But M. Vilmorin has remarked that there are plants in which that cannot be done, and in which periodicity prevails over the influence of temperature, and the development takes place only at the determined time of the year specified for each species. Thus, of corn and beet cultivated in the same hot-house with the strawberry, the stawberries were sixty to eighty days in advance of those which were cultivated in the open air, but the corn and the beet

were not at all advanced. Again, winter corn sown in the spring sprang up, but remained during the whole summer and subsequent winter like grass, and looked during the winter just like that which was sown in the autumn, and did not shoot up to seed any earlier in the following spring than that which was sown in the preceding autumn. M. Vilmorin has concentrated his opinion in these few concluding words, which also exactly express my opinion upon those facts among animals as among plants:—

"Il y a donc là en jeu une cause qui, n'étant fonction ni de la température, ni du temps (considéré comme durée), paraît l'être de la saison de l'année, et qui, assez efficace pour contre-balancer dans le blé, l'avoine, la betterave, etc., l'action de la chaleur, est au contraire absolument sans action sur d'autres plantes, comme le fraisier, la vigne, le melon, plantes dans lesquelles on peut déplacer pour ainsi dire à volonté l'époque des principales phases de la végétation."

Note.—With reference to Dr. Verloren's observation that *Acherontia Atropos* always emerges from the pupa in the evening, the following table has been supplied by W. Groves, Esq. In 1858 Mr. Groves obtained fourteen pupæ of *A. Atropos*, of which thirteen assumed the perfect state; they were kept in a warm place under a bell-glass in wet moss.

Number.	Sex.	Time of Appearance in the Perfect State.
1	Male.	1 Sept., 1858. Between 10 p. m. and 8 a. m.
2	Male.	16 ,, ,, Between 10 p. m. and 8 a. m.
3	Male.	16 ,, ,, 11 p. m.
4	Male.	17 ,, ,, 9 p. m.
5	Female.	21 ,, ,, (?).
6	Female.	23 ,, ,, 11 a. m.
7	Female.	24 ,, ,, Between 6 p. m. and 10 p. m.
8	Female.	24 ,, ,, Between 10 p. m. and 8 a. m.
9	Male.	25 ,, ,, 7 a. m.
10	Female.	2 Oct., ,, Between 10 p. m. and 8 a. m.
11	Male.	9 ,, ,, Between 10 p. m. and 8 a. m.
12	Female.	9 ,, ,, Between 10 p. m. and 8 a. m.
13	Female.	10 ,, ,, Between 10 p. m. and 8 a. m.

Nos. 12 and 13 were imperfect specimens, the wings not being fully developed.

VII. *Characters of undescribed* Lepidoptera *in the Collection of* W. W. Saunders, Esq. By F. Walker, Esq., F.L.S.

[Read 5th Nov., 1860.]

Fam. DIOPTIDÆ.

The family *Lithosiidæ*, as it is noticed in the Brit. Mus. Cat. Lep. Het. 1st Ser., Pt. 2, contains several distinct families, one of which may be termed *Dioptidæ*, the principal genus being *Dioptis*, of which the following species forms a new section.

Genus Dioptis, Hubn.

Mas.—Corpus gracile. Palpi porrecti, brevissimi, caput non superantes; articulus 3us brevissimus. Antennæ sub-pectinatæ, apice simplices. Abdomen longum. Pedes breves; tibiæ posticæ calcaribus brevissimis. Alæ amplæ.

Male.—Body slender. Palpi porrect, very short, not extending beyond the head; 3rd joint very short. Antennæ slightly pectinated, simple at the tips. Abdomen long. Legs short; hind tibiæ with very short spurs. Wings ample; 2nd inferior vein nearer to the 1st than to the 3rd in the fore-wings, and nearer to the 3rd than to the 4th in the hind-wings.

Dioptis hyelosioides.

Mas.—Atra, pectore albo-maculato, abdomine nigricante viridi vitta alba supra tenui subtus latissima, alis vitreis limpidis sub-pubescentibus, venis cyaneo-nigro-marginatis.

Male.—Deep black. Pectus with white spots. Abdomen blackish-green, with a slender white stripe above and with a broad white stripe beneath. Wings vitreous, colourless, very minutely pubescent, bordered with bluish-black; veins black, more or less broadly bordered with bluish-black.

Length of the body 9 lines; of the wings 24 lines.

Bogota.

Fam. EUSCHEMIDÆ.

Genus Euschema, Hubn.

Euschema abrupta.

Mas.—Ochracea, palpis porrectis, antennis sat late pectinatis, thorace fascia fuscescente-cinerea, alis anticis fuscescente-cinereo-trivittatis, dimidio apicali fuscescente-cinereo fasciis

duabus macularibus albidis sub-hyalinis, alis posticis vittis tribus fuscescente-cinereis macularibus deviis.

Male.—Orange. Palpi short, porrect; 2nd joint broad; 3rd elongate-conical. Antennæ rather broadly pectinated. Legs mostly whitish. Thorax with a brownish cinereous band. Fore-wings brownish cinereous for much more than half the length from the tips, with two whitish, nearly hyaline macular bands, basal part with three brownish cinereous stripes, of which the fore one is angular and extends obliquely to the disk, and the 2nd and 3rd are abbreviated; exterior border extremely oblique. Hind-wings with three macular and very irregular brownish cinereous stripes.

Length of the body 12 lines; of the wings 34 lines.

Assam.

Genus Celerena, n. g.

Mas et *Fœm.*—Corpus sat gracile. Proboscis longa. Palpi erecti, verticem paullo superantes, articulo 3o lanceolato. Antennæ longæ, graciles. Abdomen cylindricum. Pedes longi, graciles, læves. Alæ amplæ; anticæ elongatæ; posticæ breviusculæ. *Mas.*—Antennæ pubescentes, dimidio apicali setuloso. Pedes postici tibiis posticis valde incrassatis, calcaribus tribus longissimis, metatarsis tumidis. *Fœm.*—Antennæ glabræ. Tibiæ posticæ vix incrassatæ, calcaribus parvis.

Male and *Female.*—Body rather slender. Proboscis long. Palpi erect, not thick, rising a little higher than the vertex; 3rd joint lanceolate, less than half the length of the 2nd. Antennæ long, slender. Abdomen cylindrical. Legs long, slender, smooth. Wings ample. Fore-wings elongate, slightly rounded at the tips; costa very slightly convex exteriorly; exterior border very oblique. Hind-wings comparatively short. *Male.*—Antennæ pubescent for half the length from the base, minutely setulose from thence to the tips. Abdomen extending as far as the hind-wings. Hind-tibiæ very much incrassated, with three very long spurs, two in the middle and one near the tip, which is elongate-conical, and is furrowed beneath for the reception of the base of the tarsus; one of the middle spurs slightly convolute at the tip; hind-metatarsus much inflated, widening from the base to the tip. *Female*—Antennæ smooth. Hind-tibiæ very slightly incrassated; spurs short. Abdomen not extending so far as the hind-wings.

This genus is remarkable on account of the peculiar structure of the hind-legs. The second inferior vein is nearly thrice further

from the 3rd than from the 1st in the fore-wings, and four times further from the 3rd than from the 1st in the hind-wings.

Celerena divisa.

Mas et *Fœm.*—Luteo-flava, alis fascia arcuata nigra, margine exteriore schistaceo, alis anticis costa interiore schistacea, striga costali nigra, spatio apicali amplo schistaceo.

Male and *Female.*—Luteous-yellow. Wings about the exterior border slate-colour, which hue is limited by a black curved band. Fore-wings with the costa slate-colour from the base to a black streak which extends obliquely to the disk; the black band not parallel to the border as in the hind-wings, but upright, and thus leaving a large slate-coloured apical space.

Length of the body 9—11 lines; of the wings 26—28 lines.

Silhet.

Genus Terina.

Terina, Cat. Lep. Het. 1st Ser. 464.

This genus perhaps belongs to the family which may be termed *Pericopidæ*. The following species do not quite agree with the typical form, but are hardly sufficiently different to form two new genera.

Terina Anteiusa.

Mas.—Obscure fusca, subtus alba, palpis subarcuatis basi albis, antennis latissime pectinatis, thoracis margine antico coccineo, pectoris lateribus ochraceis, alis albis hyalinis fusco late marginatis, alis anticis basi postico ochraceo, striga obliquâ trigona fusca, spatio apicali fusco maculam albam hyalinam guttamque ochraceam includente.

Male.—Dark brown, white beneath. Head white in front. Palpi slender, slightly curved, hardly ascending, white at the base; 3rd joint conical, minute. Antennæ very broadly pectinated. Fore-border of the thorax crimson. Pectus orange on each side. Legs smooth, slender. Abdomen extending a little beyond the hind-wings. Wings white, hyaline, broadly bordered with dark brown, which hue is slightly bordered with ochraceous on the inner side. Fore-wings ochraceous on the hind part of the base, near which there is a triangular oblique brown streak; apical part brown, including a white hyaline spot, and a smaller hindward ochraceous spot; 2nd inferior vein nearly twice further from the 3rd than from the 1st. Hind-wings with an

ochraceous marginal spot, which is partly bordered with brown on the inner side; 2nd inferior vein much further from the 3rd than from the 1st.

Length of the body 6 lines; of the wings 16 lines.

West Africa.

Terina? Arybasa.

Mas.—Pallide lutea, capite thoracisque fascia ferrugineo-fuscis, palpis brevissimis, antennis late pectinatis, abdomine fasciis fuscis, alis longis fascia interiore arcuata margineque exteriore ferrugineo fuscis, alis anticis costa fasciaque interiore ferrugineo-fuscis.

Male.—Pale luteous. Head ferruginous brown. Palpi very short, obliquely ascending; 3rd joint very minute. Antennæ broadly pectinated. Thorax with a ferruginous brown band. Abdomen with brown semicircular bands, extending as far as the hind-wings. Legs smooth; spurs rather long. Wings long, moderately broad, with a ferruginous brown exterior border, and a curved interior ferruginous brown band; 2nd inferior vein about twice further from the 3rd than from the 1st. Fore-wings ferruginous brown along the costa, and with an exterior ferruginous brown band, which is broader than the interior one.

Length of the body 5 lines; of the wings 16 lines.

Ceram.

Fam. LITHOSIIDÆ.

Genus Lithosia, Fabr.

Lithosia despecta.

Fœm.—Pallide testacea; abdominis apice luteo, alis anticis angustis, cinerascente tinctis, posticis flavescentibus.

Female.—Pale testaceous. Abdomen luteous at the tip. Fore-wings rather narrow, with a pale cinereous tinge. Hind-wings yellowish.

Length of the body 3 lines; of the wings 10 lines.

Cape.

Fam. ARCTIIDÆ.

Genus Hypercompa, Steph.

Hypercompa Argus.

Fœm.—Ochracea, palpis apice nigris, thorace pectoreque nigro-maculatis, abdomine e maculis nigris trivittato, alis anticis

fasciis deviis e maculis albidis nigro-marginatis, spatio apicali candido lineis duabus transversis arcuatis nigris, alis posticis nigro-maculatis.

Female.—Ochraceous. Palpi with black tips. Thorax and pectus with black spots. Abdomen with three stripes of black spots. Fore-wings with irregular bands of whitish-black bordered spots; apical part pure white, with two curved black transverse lines, of which the exterior one forms lanceolate angles, and the 1st is diffusedly bluish bordered on the inner side. Hind-wings with numerous black spots of various size.

Length of the body 18 lines; of the wings 56 lines.

Hindostan.

Genus Ecpantheria, Hubn.

Ecpantheria Gulo.

Mas.—Albida, capite thoraceque nigro-notatis, abdomine alas posticas longe superante, pedibus densissime pilosis, alis anticis nigro-sub-conspersis lineis plurimis obliquis deviis lunulatis nigris, alis posticis sub-hyalinis albo-fimbriatis.

Bombyx Gulo, Morritz, MSS.

Male.—Whitish. Vertex with a short black band. Palpi black above. Thorax with several transverse black marks of various form. Abdomen extending far beyond the hind-wings. Legs mostly densely clothed. Fore-wings slightly black-speckled, with numerous oblique irregular lunulate black lines; orbicular and reniform spots of the usual form; exterior border extremely oblique. Hind-wings nearly hyaline; fringe white.

Length of the body 9 lines; of the wings 22 lines.

Venezuela.

Ecpantheria moesta.

Mas.—Alba, subtus nigra, verticis fascia nigra, thorace fasciis quinque macularibus nigris, abdominis lateribus apiceque ochraceo-pilosis, pedibus nigro-fasciatis, alis anticis lineis nonnullis nigris undulatis et angulosis disco ex parte ferrugineo orbiculari et reniformi nigro-marginatis, alis posticis obscure ferrugineis cupreo-tinctis.

Bombyx moesta, Morritz, MSS.

Male.—White, black beneath. Vertex with a black band. Thorax with five macular black bands. Abdomen with ochraceous hairs on each side and at the tip. Legs with black bands. Fore-wings with several irregular undulating and zigzag black

lines; disk partly ferruginous; orbicular and reniform marks black bordered; exterior border with black semicircular spots. Hind-wings dark ferruginous, with a cupreous tinge; interior border with ochraceous hairs.

Length of the body 8 lines; of the wings 20 lines.

Venezuela.

Genus Elysius.

Elysius, Cat. Lep. Het. 1st Ser. 713.

Elysius? signatus.

Mas.—Rufescente ochracea, palpis validis compressis subascendentibus caput paullo superantibus, articulo 2o longo, 3o minimo, antennis pectinatis breviusculis, abdomine subcristato nigro-guttato, subtus nigricante, alis angustis, alis anticis albo-signatis, alis posticis albis.

Male.—Reddish orange. Proboscis short. Palpi stout, compressed, slightly ascending, extending a little beyond the head; 2nd joint long; 3rd extremely small. Antennæ rather short, moderately pectinated. Abdomen rather depressed, slightly crested, extending far beyond the hind wings, with black dots along each side; underside blackish, except towards the base. Wings narrow. Fore-wings with a white basal point, with a white notched-in-front spot near the base of the interior border, with two white diffusedly blackish-bordered discal points, which represent the orbicular and reniform marks, and with two white streaks by the base of the 1st inferior vein. Hind-wings white.

Length of the body 8 lines; of the wings 16 lines.

Brazil.

Fam. LIPARIDÆ.

Genus Eloria.

Eloria, Cat. Lep. Het. 1st Ser. 813.

Eloria canescens.

Mas.—Cinerea, subtus alba, palpis sub-arcuatis non ascendentibus, articulo 3o lanceolato, antennis late pectinatis, tibiarum posticarum calcaribus quatuor breviusculis, alis canis subhyalinis fascia indistincta arcuata margineque lato cinereis, alis anticis linea interiore.

Male.—Cinereous, white beneath. Proboscis testaceous. Palpi slender, slightly curved, not ascending; 3rd joint lanceolate, a little shorter than the 2nd. Antennæ broadly pectinated. Abdo-

men not extending beyond the hind-wings. Legs smooth, slender; hind tibiæ with four rather short spurs. Wings hoary, nearly hyaline, thinly covered with whitish scales, with an indistinct curved cinereous band, and with a broad cinereous whitish-powdered exterior border. Fore-wings with the costa like the exterior border, and with an interior line.

Length of the body 6 lines; of the wings 18 lines.

Allied to *E. turbida* and to *E. discalis*.

Brazil.

Genus Cingilia, n. g.

Mas.—*Eloriæ* affinis. Corpus sat gracile. Proboscis mediocris. Palpi porrecti, caput sat superantes, articulo 3o minimo. Antennæ longiusculæ, late pectinatæ. Pedes glabri, graciles; tibiæ posticæ calcaribus quatuor longis. Alæ amplæ; anticæ apice rectangulatæ, costa margineque exteriore subconvexis.

Male.—Allied to *Eloria*. Body rather slender. Proboscis moderately long. Palpi porrect, hardly extending beyond the head; 3rd joint very minute. Antennæ rather long, broadly pectinated. Abdomen not extending beyond the hind-wings. Legs smooth, slender; hind tibiæ with four long spurs. Wings ample. Fore-wings rectangular at the tips; costa and exterior border very slightly convex; 2nd inferior vein more than four times further from the 3rd than from the 1st. Hind-wings with the 2nd inferior vein hardly twice further from the 3rd than from the 1st.

Cingilia humeralis.

Mas.—Alba, subtus nigra, capite ochraceo, thorace fascia antica tenui nigra maculisque duabus humeralibus ochraceis, abdomine nigro, segmentis ochraceo-marginatis, alis linea exteriore undulata e punctis nigris, alis anticis costa interiore nigra lineaque interiore vaga e punctis nigris.

Male.—White, black beneath. Head ochraceous. Thorax with a slender black band in front, and with an ochraceous spot on each shoulder. Abdomen black; hind borders of the segment ochraceous. Wings with an exterior undulating line of black points; fringe with black points. Fore-wings black along the costa from the base to one-third of the length, where there is an irregular line of black points.

Length of the body 8 lines; of the wings 22 lines.

United States.

Genus Euproctis, Hubn.

Euproctis atrigutta.

Fœm.—Candida, palpis roseis brevissimis, pedibus anterioribus roseo-fasciatis, alis anticis nigro-quadriguttatis.

Female.—Pure white. Palpi rosy, slender, very short. Abdomen not extending beyond the hind-wings. Anterior legs with rosy bands. Fore-wings with four black dots, which form a line along the forepart of the disk and parallel to the costa; 1st dot basal; 4th on the exterior border; costa and exterior border very slightly convex; tips rounded.

Length of the body 4 lines; of the wings 11 lines.

West Africa.

Genus Enydra, n. g.

Mas et *Fœm.*—Corpus sat robustum. Proboscis obsoleta. Palpi porrecti. Pedes validi. Alæ spissæ, sat latæ; anticæ apice subrotundatæ. *Mas.*—Palpi robusti, caput perparum superantes, articulo 3o longi-conico. Antennæ pectinatæ. Tibiæ posticæ calcaribus duobus longis apicalibus. *Fœm.*—Palpi graciles, caput longissime superantes, articulo 3o lineari. Tibiæ posticæ calcaribus quatuor longis.

Allied to *Anaphe*, Cat. Lep. Het. 1st Ser. 856.

Male and *Female.*—Body rather stout. Proboscis obsolete. Palpi porrect. Abdomen not extending beyond the hind-wings. Legs robust. Wings stout, rather broad. Fore-wings somewhat rounded at the tips; costa straight; exterior border hardly convex, moderately oblique. *Male.*—Palpi stout, extending very little beyond the head; 3rd joint elongate-conical, about half the length of the 2nd. Antennæ moderately pectinated. Hind-tibiæ with two long apical spurs. *Female.*—Palpi slender, extending very far beyond the head; 3rd joint linear, conical at the tip, as long as the 2nd. Antennæ smooth, slender. Legs rather slender; hind tibiæ stout, with four long spurs.

Enydra cinctigutta.

Mas et *Fœm.*—Testacea, alis anticis maculis tribus discalibus albis nigro-marginatis. *Mas.*—Maculis duabus exterioribus connexis. *Fœm.*—Maculis duabus exterioribus disjunctis.

Male and *Female.*—Testaceous. Fore-wings with three white black-bordered discal spots, one interior, the other two exterior,

the fore one smaller than the hind one. *Male.*—Exterior spots connected. *Female.*—Exterior spots separate.

Length of the body 6 lines; of the wings 15 lines.

Port Natal.

Genus Lymantria, Hubn.

Lymantria metarhoda.

Mas.—Albida, subtus rosea, capite thoraceque antico cervinis, palpis roseis supra nigro-variis, antennis latissime pectinatis, abdomine alisque posticis roseis, his fusco-unistrigatis, alarum anticarum fasciis fuscis obliquis macularibus lunulatis.

Male.—Whitish, thick, mostly rose-colour beneath. Head and forepart of the thorax fawn-colour. Vertex rosy on each side. Palpi rose-colour, partly black above. Antennæ very broadly pectinated, rosy at the base. Abdomen and hind-wings rosy, the latter with a brown streak near the anterior angle. Fore-wings with several oblique macular, mostly lunulate, more or less interrupted, brown bands; a rosy basal mark.

Length of the body 9 lines; of the wings 24 lines.

This species has much resemblance to *L. maculosa*.

Ceylon.

Fam. NOTODONTIDÆ.

Genus Notodonta, Ochs.

Notodonta scitipennis.

Fœm.—Schistaceo-cinerea, capite thoraceque postico rufescentibus, tegulis nigricante marginatis, alis anticis postice cervinis, lineis duabus transversis dentatis rufescentibus, vittis duabus basalibus unâque exteriore dentatâ strigisque duabus subapicalibus nigricante-rufis, lituris tribus discalibus cervinis nigro-strigatis, margine interiore fasciculato, posticis pallidioribus, lineis duabus indistinctis obscurioribus, angulo interiore rufescente.

Female.—Slaty cinereous. Head mostly reddish. Antennæ pale luteous. Palpi slender. Thorax reddish hindward, excepting the tegulæ, which are blackish bordered. Legs most densely clothed, especially the fore-pair, mostly reddish beneath. Fore-wings fusiform, broadly fawn-coloured along the interior border, which is tufted near the base; the fawn-coloured space is traversed by two dentate reddish lines, and is accompanied from the base by two blackish red stripes, which are succeeded by a single

one; the latter is dentate exteriorly, and joins two sub-apical streaks of the same hue; disk with two fawn-coloured marks, one longitudinal, the other transverse, both containing black streaks; a dot of the same hue between them. Hind-wings paler than the fore-wings, with two indistinct darker lines, reddish about the interior angle; marginal line dark brown, like that of the fore-wings.

Length of the body 9 lines; of the wings 20 lines.

Country unknown.

Genus Heterocampa, Doubled.

Heterocampa thyatiroides.

Mas.—Cervina, albido-varia, nigro-conspersa, capite cristato, antennis late pectinatis triente ferè apicali filiformi, abdomine alas posticas sat superante, alis anticis obtusis nigro-strigatis, basi strigisque sub-marginalibus cervinis, lineis interiore et exteriore nigris dentatis duplicatis indistinctis, alis posticis cinereo-fuscis, basi fimbriaque albidis.

Male.—Fawn-colour, partly whitish; plumes here and there tipped with black. Head with an upright crest. Palpi porrect, extending a little beyond the head; 3rd joint nearly one-third of the length of the 2nd. Antennæ broadly pectinated to beyond two-thirds of the length. Tegulæ of the thorax slightly bordered with black. Abdomen extending somewhat beyond the thorax. Fore-wings somewhat obtuse, streaked and minutely speckled with black, fawn-coloured towards the base, and with fawn-coloured streaks along the exterior border; interior and exterior lines black, dentate, double, indistinct except towards the interior border. Hind-wings cinereous brown; base and fringe whitish.

Length of the body 8 lines; of the wings 18 lines.

Canada.

Genus Sorama.

Sorama, Cat. Lep. Het. 1st Ser. 1034.

Sorama inclyta.

Fœm.—Cinereo-alba, capite thoraceque antico nigro-conspersis, thoracis cristâ densâ nigrorufescente, abdomine luteo, alis anticis squamosis rufescente nigro et schistaceo variis, lineis interiore et exteriore strigâque latâ sub-marginali nigris, strigula argentea discali, alis posticis cinereo-rufescentibus, basi margineque interiore luteis.

Female.—Luteous. Head and forepart of the thorax with black and whitish hairs; the rest of the thorax with a dense reddish-black tipped crest; head slightly crested. Antennæ cinereous, luteous beneath. Abdomen extending somewhat beyond the hind-wings. Legs densely tufted. Fore-wings squamous, cinereous white, irregularly varied with reddish, with black, and with slaty cinereous; interior and exterior lines black, the former partly obsolete, the latter deeply dentate in front; much of the space along the interior border black; a broad black streak diverging hindward from the hind part of the exterior border; a minute silvery white discal streak. Hind-wings cinereous-reddish, luteous towards the base and along the interior border.

Length of the body 15 lines; of the wings 40 lines.

New South Wales.

Genus Phalera, Hubn.

Phalera cossoides.

Mas.—Cinerea, capite supra albo anticè rufescente, thorace antico cervino, abdomine longissimo nigricante fusco, segmentorum marginibus apiceque albidis, alis anticis nigro-lineatis, plagâ apicali cervinâ, lineâ sub-marginali e lunulis fuscis, orbiculari et reniformi fuscescentibus albido-marginatis, alis posticis cinereo-fuscis fusco late marginatis.

Male.—Cinereous. Head white about the base of the antennæ; forepart and palpi reddish. Antennæ serrated. Thorax fawn-coloured in front; tegulæ black bordered. Abdomen blackish brown, extending very far beyond the hind-wings; hind borders of the segments and tip whitish. Fore-wings minutely black speckled; basal, interior and exterior lines black; some less distinct dentate black lines between the interior line and the exterior line, which is slightly undulating, and borders the large oblong apical fawn-coloured patch; sub-marginal line composed of brown lunules; fringe yellowish, with reddish marks opposite the veins; orbicular and reniform marks brownish, whitish bordered. Hind-wings cinereous brown, broadly brown bordered.

Length of the body 15 lines; of the wings 36 lines.

The close resemblance of this species to *P. Javana*, Moore (Cat. Lep. Mus. E. Ind. House, vol. ii. 432, pl. 13 a, f. 6), indicates that they both had one common origin.

Silhet.

Genus Gopha, n. g.

Mas.—Corpus sat robustum. Fasciculus frontalis productus. Proboscis distincta. Palpi validi, pilosi, obliquè ascendentes, caput longè superantes, articulo 3o parvo. Antennæ pectinatæ, apices versus simplices. Abdomen alas posticas superans. Pedes robusti, pilosi; tibiæ posticæ calcaribus quatuor longis. Alæ anticæ acutæ, costâ rectâ, margine exteriore non obliquo.

Male.—Body moderately stout. Frontal tuft prominent. Proboscis distinct. Palpi stout, pilose, obliquely ascending, extending rather far beyond the head; 3rd joint conical, minute. Antennæ moderately pectinated to beyond half the length, simple from thence to the tips. Legs stout, pilose; hind-tibiæ with four long spurs. Wings moderately broad. Fore-wings acute; costa straight; exterior border not oblique.

Allied to *Rosama*, Cat. Lep. Het. 1st Ser. 1066.

Gopha mixtipennis.

Mas.—Cinerea, fusco-conspersa, capite thoraceque viridibus, alis anticis viridi variis, disco obscurè fusco, lineâ subcostali albâ, alis posticis marginem versus fuscis.

Male.—Cinereous, speckled with brown. Head above and thorax grass-green. Abdomen above, and hind-wings towards the exterior border brown, the latter with a whitish fringe. Fore-wings varied with grass-green, which forms a zig-zag black-marked sub-marginal line; disk irregularly dark-brown; a shining white sub-costal line.

Length of the body 7 lines; of the wings 14 lines.

Brazil.

Genus Chadisra, n. g.

Fœm.—Corpus robustum. Proboscis obsoleta. Palpi robusti, ascendentes, frontem non superantes, articulis indistinctis. Antennæ sub-crenulatæ. Thorax cristatus. Abdomen longi-conicum, alas posticas sat superans. Alæ elongatæ; anticæ apice rotundatæ, margine exteriore perobliquo.

Female.—Body stout. Proboscis obsolete. Palpi stout, ascending, not rising higher than the front; joints indistinct. Antennæ minutely crenulated. Thorax crested. Abdomen elongate, conical, extending rather far beyond the hind-wings. Wings

elongated. Fore-wings rounded at the tips; exterior border very oblique.

Allied to *Rilia*, Cat. Lep. Het. 1st Ser. 1075.

Chadisra bipars.

Fœm.—Cinerea, palpis rufescentibus, alis anticis dimidio basali ferrugineo anticè costam non attingente posticè excavato, guttâ basali nigrâ oblongâ nigro-marginatâ, liturâ costali subapicali elongatâ ferrugineâ nigro-marginatâ.

Female.—Cinereous. Palpi reddish. Crest of the thorax with black-tipped plumes. Fore-wings ferruginous for half the length from the base; this hue partly black-bordered, not extending to the costa, with two excavations by the interior border, and containing a black oblong pale-bordered dot near the base; costa with an elongated ferruginous black-bordered mark near the tip.

Length of the body 8 lines; of the wings 20 lines.

Hindostan.

Fam. LIMACODIDÆ.

Genus Miresa.

Miresa, Cat. Lep. Het. 1st Ser. 1123.

Miresa divergens.

Mas.—Luteo-cervina, capite thoraceque ex parte cinereis, alis anticis fasciâ mediâ obliquâ albidâ, fasciâ exteriore tenui nigrâ, alis posticis fuscescente cinereis.

Male.—Luteous fawn-colour, paler beneath. Head and thorax partly cinereous. Palpi lanceolate, rather long. Antennæ stout, simple. Abdomen not extending beyond the hind-wings. Legs thick, short. Wings rounded. Fore-wings brownish cinereous beneath, obtuse at the tips; exterior border very convex; a whitish oblique middle band, which on the costa is almost contiguous to an exterior slender black band, the latter diverging hindward. Hind-wings brownish cinereous.

Length of the body 5 lines; of the wings 10 lines.

South America.

Genus Athrula, n. g.

Mas.—Corpus robustum. Proboscis obsoleta. Palpi porrecti, lati, compressi, obtusi, frontem vix superantes. Antennæ late pectinatæ. Thorax dense vestitus. Abdomen lineare. Pedes breves, pilosi. Alæ elongatæ, amplæ; anticæ sub-

acutæ, margine exteriore perobliquo; posticæ rotundatæ, abdomen paullo superantes.

Male.—Body stout. Proboscis obsolete. Palpi porrect, broad, compressed, obtuse at the tips, extending very little beyond the front. Antennæ broadly pectinated. Thorax thickly clothed. Abdomen linear. Legs short, pilose. Wings elongate, ample. Fore-wings somewhat acute; costa hardly convex; exterior border slightly convex, very oblique. Hind-wings rounded, extending a little beyond the abdomen.

Athrula saturnioides.

Mas.—Rufescente fulva, alarum fasciâ latâ luteâ marginali albido-marginatâ, alis anticis lineâ interiore albidâ flexâ, guttâ discali ferrugineâ, lineâ exteriore antice flexâ.

Male.—Reddish-tawny, with a cinereous tinge beneath. Wings with an indistinct exterior reddish line, and a broad luteous marginal band, which is bordered with whitish, except towards the costa of the fore-wings, where it is reddish; fringe cinereous, interlined with brown. Fore-wings with an interior bent whitish line, and with a ferruginous discal dot; exterior line bent, and diverging in front from the marginal band.

Length of the body 4½ lines; of the wings 14 lines.

Brazil.

Fam. DREPANULIDÆ.

Genus Apha.

Apha, Cat. Lep. Het. 1st Ser. p. 1180.

Apha? lanuginosa.

Mas.—Cinereo-cervina, palpis thorace pectore pedibusque densè pilosis, antennis latissime pectinatis, alis latis quadrilineatis densè vestitis, anticis subfalcatis.

Male.—Cinereous fawn-colour. Palpi, thorax, pectus and legs densely pilose. Antennæ very broadly pectinated. Wings broad, densely clothed, with four indistinct, parallel, lunulate, slightly darker lines. Fore-wings sub-falcate, with a straight, blackish, double, obliqne, very distinct exterior line, which is diffusedly bordered with pale cinereous on its outer side. Hind-wings with a single brown less distinct line, which has blackish points along its outer side.

Length of the body 8 lines; of the wings 24 lines.

Silhet.

Fam. SATURNIIDÆ.

Genus Sosxetra, n. g.

Mas.—Corpus sat robustum. Proboscis obsoleta. Palpi longi, crassi, arcuati, dense pilosi, verticem attingentes. Antennæ latè pectinatæ, apice filiformes. Abdomen longiusculum, alas posticas sat superans. Pedes breviusculi, femoribus tibiisque anticis densissimè fimbriatis, tibiis posticis quadricalcaratis. Alæ parvulæ; anticæ apice rotundatæ, margine exteriore convexo sub-obliquo; posticæ sub-truncatæ.

Male.—Body rather short. Proboscis obsolete. Palpi long, thickly curved, densely pilose, applied to the head and extending to the vertex. Antennæ broadly pectinated, filiform towards the tips; branches successively decreasing in length. Abdomen rather long, extending some distance beyond the hind-wings. Legs rather short, fore-femora and fore-tibiæ very densely fringed; hind-tibiæ with four long spurs. Wings rather small. Fore-wings somewhat rounded at the tips; exterior border convex, slightly oblique. Hind-wings slightly trunctated at the tips and on the adjoining part of the exterior border.

Allied to *Phaneta*, Cat. Lep. Het. 1st Ser. 1382.

Sosxetra grata.

Mas.—Ochracea, thoracis fasciâ roseâ, abdomine aurato, alis anticis cinereo-lineatis, fimbriâ luteâ rufo-nigroque notatâ, liturâ discali flavâ nigro-marginatâ, alis posticis flavis anticè ochraceis.

Male.—Orange, testaceous beneath. Palpi brown, testaceous at the base, rosy on each side. Thorax with a rosy band in front, and with a rosy streak along each of the tegulæ, which are very long. Abdomen gilded, tufted at the tip; appendages large. Legs whitish-testaceous; fore-legs mostly rosy. Fore-wings with a cinereous line along each of the areolets; fringe luteous, interrupted by red and black white-specked marks; discal mark yellow, black-bordered on the outer side. Hind-wings yellow, orange in front, marginal marks like those of the fore-wings.

Length of the body 8 lines; of the wings 16 lines.

Brazil.

Fam. BOMBYCIDÆ.

Genus Lasiocampa, Schr.

Lasiocampa inobtrusa.

Mas.—Cervina, densissime pilosa, palpis sub-arcuatis, antennis latè pectinatis, alis anticis trilineatis.

Male.—Fawn-colour. Body and legs densely pilose. Palpi long, broad, pilose, slightly bent. Antennæ broadly pectinated. Fore-wings with three indistinct slightly darker lines; interior line very indistinct, exterior line oblique, nearly straight, submarginal line zigzag, parallel to the exterior line; discal mark oblong, cinereous, brown-bordered, with a brown point in front of it; exterior border convex. Hind-wings without markings.

Length of the body 8 lines; of the wings 20 lines.

Hindostan.

Genus Caphara, n. g.

Mas.—Corpus cylindricum, incrassatum, densè pilosum. Proboscis obsoleta. Palpi robusti, breves. Antennæ validæ, breves, convolutæ. Abdomen alas posticas paullò superans. Pedes breves, crassi. Alæ amplæ, longissimæ; anticæ acutæ, margine exteriore perobliquo; posticæ subacutæ.

Male.—Body cylindrical, very thick, densely clothed. Proboscis obsolete. Palpi stout, short. Antennæ thick, short, convoluted, pectinated; branches short, stout. Abdomen extending a little beyond the hind-wings. Legs short, thick. Wings ample, very long. Fore-wings acute; costa slightly convex exteriorly; exterior border extremely oblique. Hind-wings slightly acute.

Allied to *Megasoma*, Boisd.

Caphara marginata.

Mas.—Rufescente ferruginea, abdomine supra luteo-cervino, alarum anticarum fasciis indeterminatis cinereis liturâ discali nigrâ, alis posticis albis semihyalinis margine latissimo rufescente-ferrugineo.

Male.—Reddish-ferruginous, paler beneath. Abdomen above luteous fawn-colour. Fore-wings with a black discal mark, and with oblique and very diffuse band of cinereous speckles. Hind-wings white, semihyaline, with a very broad reddish-ferruginous border.

Length of the body 14 lines; of the wings 40 lines.

Port Natal.

Genus Cistissa, n. g.

Fœm.—Corpus incrassatum. Proboscis obsoleta. Palpi vix conspicui. Antennæ filiformes, longiusculæ. Thorax densissimè pilosus. Abdomen apice densissimè lanuginosum. Pedes crassi, tibiis latè fimbriatis. Alæ amplæ; anticæ apice rotundatæ, margine exteriore perobliquo.

Female.—Body very thick. Proboscis obsolete. Palpi rudimentary. Antennæ filiform, rather long. Thorax very densely clothed. Abdomen at the tip with a large mass of woolly hair. Legs thick; tibiæ thickly and broadly fringed. Wings long, ample. Fore-wings with the costa hardly convex exteriorly; tips rounded; exterior border extremely oblique. Hind-wings rounded.

Allied to *Eriogaster*, Germ.

Cistissa expansa.

Fœm.—Cinereo-fusca, thorace maculis duabus albido-cinereis, abdomine pilis apicalibus albido-cinereis, alarum lineis obscurioribus obliquis angulosis.

Female.—Cinereous-brown. Thorax with a whitish cinereous spot on each side in front. Abdomen with an apical mass of whitish cinereous hairs. Wings with two or three zigzag oblique darker lines.

Length of the body 12 lines; of the wings 36 lines.

Country unknown.

Genus Trichiura, Steph.

Trichiura? albiplaga.

Mas.—Fusca, luteo densissimè pilosa, alis breviusculis maculâ discali magnâ albâ sub-hyalinâ.

Male.—Brown. Body very thickly clothed with long luteous hairs. Wings short, with a large white nearly hyaline spot in the disk of each; fringe pale cinereous.

Length of the body 5 lines; of the wings 12 lines.

Cape.

Genus Batatara, n.g.

Mas.—Corpus crassum, densissimè pilosum. Proboscis obsoleta. Palpi brevissimi. Antennæ brevissimæ, latissimè pectinatæ. Pedes breves, densissimè pilosi. Alæ latæ, densè

vestitæ, margine interiore lanuginoso; anticæ sub-falcatæ, non acutæ; posticæ abdomen longe superantes.

Male.—Body thick, very densely pilose. Proboscis obsolete. Palpi very short. Antennæ very short, very broadly pectinated. Legs short, very densely pilose. Wings broad, densely clothed with long, thick-set lanuginous hairs along the interior border. Fore-wings sub-falcate, not acute; exterior border straight. Hind-wings rounded, extending much beyond the abdomen.

Allied to *Bombyx*, Hubn. (Cat. Lep. Het. 1st Ser. 1505).

Batatara fusifascia.

Mas.—Cinereo-fusca, antennis luteis, abdomine pallidè luteo, alarum fasciis tribus obliquis diffusis albido-cinereis, anticarum liturâ discali indistinctâ obscurè fuscâ.

Male.—Cinereous brown. Antennæ luteous. Abdomen pale luteous. Wings with three whitish-cinereous, diffuse, oblique bands, which are more distinct but less regular in the fore-wings than in the hind-wings; 3rd band undulating and sub-marginal in the fore-wings, marginal in the hind-wings. Fore-wings with a dark brown indistinct discal mark.

Length of the body 9 lines; of the wings 22 lines.

Amazon Region.

Fam. APAMIDÆ, Guén.

Sub-fam. Xylophasides, Guén.

Genus Laphygma, Guén.

Laphygma obliterans.

Mas.—Pallidissimè cervina; antennæ serrato-ciliatæ; alæ anticæ lituris fuscis, claviformi et orbiculari vix determinatis, reniformi obscuro sub-quadrato, lineis interiore et exteriore indistinctis, hac flexa, linea sub-marginali albida angulosa valde indistincta; posticæ albæ.

Male.—Very pale fawn-colour. Antennæ serrate-ciliate. Abdomen paler than the thorax. Fore-wings shining, with brown markings; basal and orbicular marks slight, reniform mark dark brown, sub-quadrate; interior and exterior lines slight, indistinct, the latter bent; sub-marginal line whitish, zigzag, very indistinct. Hind-wings white, shining.

Length of the body 5 lines; of the wings 12 lines.

Cape.

Fam. ORTHOSIDÆ, Guén.

Genus Xanthia, Ochs.

Xanthia basalis.

Lutea, capite subtus palpis alisque anticis basi roseis, abdomine alisque posticis albidis, pedibus cinereis fusco-conspersis.

Luteous. Head beneath, palpi, and fore-wings at the base, rosy red. Abdomen and hind-wings whitish. Legs cinereous, brown speckled.

Length of the body 5 lines; of the wings 12 lines.

Cape.

Fam. HADENIDÆ, Guén.

Genus Hadena, Treit.

Hadena inculta.

Fœm.—Cinereo-fusca, robusta, capite thoraceque pilosissimis, palpis erectis articulo 3o minimo, alis anticis lineis liturisque discalibus pallide cinereis nigro-marginatis, lineis 1a 2aque undulatis, 3a flexa indistincta, 4a angulosa non marginata, orbiculari et reniformi oblongis annularibus, hac ex parte pallida, costa cinereo-punctata.

Female.—Cinereous-brown, stout. Head and thorax very pilose. Palpi ascending, not rising higher than the vertex; 3rd joint very minute. Antennæ bare. Abdomen extending beyond the hind-wings. Legs stout; hind tibiæ with long spurs. Wings moderately broad. Fore-wings sub-quadrate at the tips; lines and discal marks pale cinereous, mostly black-bordered; basal and interior lines undulating; exterior line bent, indistinct; submarginal line zigzag, not black-bordered; orbicular and reniform annular, oblong, the former a little smaller than the latter, which is partly pale cinereous; costa straight, with pale cinereous points; exterior border oblique hindward.

Length of the body 7 lines; of the wings 14 lines.

Cape.

Fam. XYLINIDÆ, Guén.

Genus Epimecia, Guén.

Epimecia angulata.

Fœm.—Cervina, corpore albido, tibiis posticis sub-incrassatis, alis anticis acutis, puncto discali vittaque angulata albis, striga

exteriore albida, linea sub-marginali vix undulata alba, strigulis sub-marginalibus ex atomis nigris, spatio marginali postice nigro, punctis marginalibus fuscis, alis posticis cinereo cervinis.

Female.—Body whitish. Frontal tuft prominent. Antennæ slender. Hind-tibiæ slightly incrassated, with long spurs. Fore-wings acute fawn-colour, with a white discal point, and with a white angular stripe, which ends at a little beyond the point, and is there connected with the end of a diffuse whitish streak, which extends to the tip of the wing; a white, hardly undulating, sub-marginal line, which is nearly parallel to the exterior border, and has between it and the 1st line some slight short streaks, which are composed of black speckles; marginal space whitish hindward; marginal points brown; fringe whitish, doubly interlined with pale brown; costa straight; exterior border convex, very oblique. Hind-wings cinereous fawn-colour; fringe pale, not interlined.

Length of the body 6 lines; of the wings 16 lines.

Hindostan.

Fam. HELIOTHIDÆ, Guén.

Genus Panemeria, Hubn.

Panemeria lateralis.

Mas.—Cupreo-fusca, subtus cinerea, palpis thoraceque antico obscure ochraceis, abdominis lateribus luteis, alis posticis luteo late vittatis.

Male.—Cupreous-brown, cinereous beneath. Palpi and fore-border of the thorax dull ochraceous, the former broad, hirsute, extending somewhat beyond the head. Abdomen with a luteous line along each side. Wings shining. Hind-wings with a luteous stripe, which is attenuated towards the interior border; the latter mostly luteous.

Length of the body $2\frac{1}{2}$ lines; of the wings 6 lines.

Hindostan.

Genus Gora, n. g.

Fœm—Corpus robustum. Proboscis longiuscula. Palpi subarcuati, sub-ascendentes, caput sat superantes, articulo 3o parvo. Antennæ sat graciles. Abdomen sub-lineare, alas posticas longe superans. Tibiæ posticæ validæ, calcaribus quatuor longissimis. Alæ elongatæ, non latæ; anticæ apice

rotundatæ, margine exteriore convexo; posticæ margine exteriore postico sub-truncato.

Female.—Body stout. Proboscis rather long. Palpi slightly curved and ascending, extending somewhat beyond the head; 3rd joint minute, conical. Antennæ rather slender. Abdomen nearly linear, except towards the tip, extending far beyond the hind-wings. Legs moderately long; hind-tibiæ stout, with four very long spurs. Wings elongate, not broad. Fore-wings rounded at the tips; exterior border convex, very slightly oblique. Hind-wings with the exterior border slightly truncate hindward.

Allied to *Anthœcia*, Boisd.

Gora æqualis.

Fœm. — Cinerea, fuscescente purpureo conspersa, abdominis segmentis luteo-marginatis, alis fuscescente purpureis fimbriâ luteâ, anticis costâ interiore plagâque costali exteriore cinereis, posticis vittâ luteâ abbreviatâ interruptâ.

Female.—Cinereous, speckled with brownish-purple, whitish cinereous beneath. Abdomen brownish-purple; hind borders of the segments and sides luteous. Wings brownish-purple; fringe luteous. Fore-wings with cinereous speckles; costa towards the base and an exterior costal patch cinereous, brownish-purple speckled. Hind-wings with a broad discal abbreviated and obliquely interrupted luteous stripe.

Length of the body 4 lines; of the wings 12 lines.

Brazil.

Fam. ACONTIDÆ, Guén.

Genus Acontia, Ochs.

Acontia antica.

Mas.—Alba, squamosa, thorace alisque anticis chalybeo-fuscis, abdomine alisque posticis fuscescente cinereis, his fimbriâ albâ, alis anticis costâ margineque exteriore ex parte albis.

Male.—White, squamous. Thorax chalybeous brown, except in front. Abdomen and hind-wings brownish-cinereous, the latter with a white fringe. Fore-wings chalybeous-brown, broadly white along the costa, except towards the tips; this hue interrupted by an oblique brownish streak; exterior border white, with the exception of some sub-marginal brownish spots and a row of elongated black marginal points.

Length of the body 4 lines; of the wings 9 lines.

Natal.

Genus Azamora.

Azamora, Cat. Lep. Het., 3rd Ser. 1757.

Azamora basiplaga.

Mas.—Rufescente cervina, fasciculo frontali conspicuo, palpis nigricante fuscis, tibiis posterioribus dense fimbriatis, alis anticis spatio intermedio pallidiore, lineis duabus transversis albis, 2â arcuatâ, alis posticis cinereo-fuscis.

Male.—Reddish-fawn colour, cinereous brown beneath. Frontal tuft prominent, acute. Palpi blackish-brown, obliquely ascending, hardly rising higher than the vertex; 3rd joint conical, about one-sixth of the length of the 2nd. Antennæ simple. Posterior tibiæ densely fringed. Wings rather broad. Fore-wings rectangular, paler at the base; costa dilated towards the base, slightly concave in the middle; two transverse white lines including between them nearly half the surface of the wings; this space is paler than the rest of the surface and especially so towards the interior line, which is curved. Hind-wings cinereous brown.

Length of the body 5 lines; of the wings 14 lines.

Amazon Region.

Fam. ANTHOPHILIDÆ, Dup.

Genus Hydrelia, Guén.

Hydrelia? curvifera.

Fœm.—Ferrugineo-fusca, subtus albida, capite antico thoracisque lateribus anticis albis, palpis porrectis securiformibus, tibiis posticis fimbriatis, alis anticis subfalcatis, vittis duabus (una subcostali, altera discali arcuata) connexis fasciâque marginali guttas fuscas includente albidis, alis posticis cinereo-fuscis.

Female.—Coffee-brown, whitish beneath. Head white in front. Palpi porrect, short, securiform, extending a little beyond the head, Antennæ short, smooth. Thorax white on each side. Abdomen not extending beyond the hind-wings. Hind-tibiæ fringed; spurs long. Fore-wings subfalcate, with a whitish marginal band, which contains the brown marginal dots; a whitish short curved stripe in the disk, forming a loop with the whitish sub-costal stripe, which is interrupted and irregular exteriorly; the inclosed space blackish streaked. Hind-wings cinereous-brown.

Length of the body 3 lines; of the wings 7 lines.

Ceylon.

Genus Xanthoptera, Guén.

Xanthoptera? alboflava.

Mas.—Flava, abdomine pallidè testaceo, alis anticis acutis nigro-triguttatis, gutta 1a sub-costali, 2a discali, 3a postica interiore, linea exteriore indistincta undulata spatioque marginali cervinis, alis posticis albis margine exteriore fuscescente.

Male.—Yellow, shining. Head wanting. Abdomen pale testaceous, not extending beyond the hind-wings. Hind-tibiæ with very long spurs. Fore-wings acute, with three black points; the 1st near the costa, in front of the 2nd, which represents the reniform mark; 3rd hindward in the disk and nearer the base; an indistinct exterior undulating fawn-coloured line; marginal space mostly fawn-colour; costa straight; exterior border convex, slightly oblique. Hind-wings white, with a brownish tinge along the exterior border.

Length of the body 3 lines; of the wings 8 lines.

Honduras.

Xanthoptera? cupreoviridis.

Fœm.—Flavescente viridis, subtus alba, abdomine alisque posticis albis, alis anticis costa interiore rufescente, macula discali spatioque marginali rufescente cupreis.

Female.—Yellowish-green, white beneath. Abdomen white, not extending beyond the hind-wings. Fore-wings with a diffuse reddish tinge along the costa, extending from the base to the round reddish cupreous discal spot; marginal space irregularly reddish cupreous, diffusedly reddish-bordered on the inner side. Hind-wings white.

Length of the body 3 lines; of the wings 8 lines.

West Africa.

Genus Anthophila, Ochs.

Anthophila? plana.

Mas.—Albido-cervina, robusta, palpis validis ascendentibus articulo 3o brevissimo, antennis ciliatis, pedibus posticis longis robustis, alis fusco sub-conspersis linea marginali fusca, alis anticis lineis duabus albidis obliquis sub-undulatis, 1a antice obsoleta, spatio intermedio pallide fusco, alis posticis linea exteriore fuscescente denticulata antice obsoleta.

Male.—Whitish fawn-colour, stout. Palpi stout, obliquely ascending, not rising higher than the vertex; 3rd joint extremely

short. Antennæ thickly and minutely ciliated. Hind-legs long, stout; spurs moderately long. Wings very thinly and minutely brown-speckled; marginal line brown; fringe long, whitish. Fore-wings with two whitish oblique slightly undulating lines; the 1st obsolete in front; space between them mostly pale brown; costa straight; tips rounded, exterior border rather oblique. Hind-wings with a brownish exterior denticulated line, which is obsolete in front.

Length of the body 4 lines; of the wings 7 lines.

Hindostan.

Fam. EURHIPIDÆ, Guén.

Genus Penicillaria, Guén.

Penicillaria Areusa.

Mas.—Cinereo-rufescens, subtus lutescens, palpis crassis densè pilosis, antennis vix pubescentibus, alis anticis nebulosis albo-tinctis basi viridibus, lineis tribus nigris dentatis, duabus duplicatis, lineâ submarginali angulosâ indistinctâ, orbiculari et reniformi magnis albis, alis posticis lutescentibus fusco latè marginatis.

Male.—Cinereous-reddish, somewhat luteous beneath. Palpi thick, obliquely ascending, densely pilose; 3rd joint conical, about one-fourth of the length of the 2nd. Antennæ stout, hardly pubescent. Fore-wings clouded, grass-green at the base, here and there tinged with white; interior, middle and exterior lines black, dentate, the first and the last double; sub-marginal line zigzag, indistinct, interrupted in front by two black streaks; marginal lunules black; fringe denticulated; orbicular and reniform marks white, large, distinct, the latter narrow in front. Hind-wings dull pale luteous, with a broad brown border, which includes a pale dentate sub-marginal line; interior border whitish, with oblique black marks.

Length of the body 6 lines; of the wings 12 lines.

Amazon Region.

Genus Erysthia, n. g.

Fœm.—Corpus sat validum. Proboscis longa, gracilis. Palpi porrecti, graciles, brevissimi, articulo 3o acuto minimo. Antennæ graciles, simplices, longiusculæ. Abdomen alas posticas vix superans. Pedes breves, graciles; tibiæ posticæ calcaribus quatuor longis. Alæ anticæ apice subrotundatæ, margine exteriore convexo.

Female.—Body moderately stout. Proboscis long, slender. Palpi porrect, slender, very short, not extending so far as the front; 3rd joint acute, extremely minute. Antennæ slender, simple, rather long. Abdomen hardly extending beyond the hind-wings. Legs smooth, slender; hind-tibiæ with four long spurs. Wings not broad. Fore-wings somewhat rounded at the tips; exterior border convex, rather oblique.

Erysthia obliquata.

Fœm.—Albida, squamosa, capite thoraceque antico fuscis, alis anticis ex parte fuscis albo-trilineatis, lineâ 1â basali, 2â obliquâ, liturâ discali lunulatâ obscurè fuscâ, maculâ posticâ nigricante fuscâ.

Female.—Iridescent whitish, squamous. Head above and fore-border of the thorax brown. Thorax with brown-tipped plumes. Fore-wings with three white lines; 1st line proceeding from the base to the disk, parallel to the interior border, broadly and diffusedly brown-bordered in front; 2nd line oblique, beyond the dark brown lunulate discal mark, very broadly brown-bordered on the outer side; this brown hue mostly continued to the exterior border, but intersected by the 3rd white line; marginal points brown; a blackish-brown spot near the interior border between the 2nd and 3rd lines.

Length of the body 4 lines; of the wings 12 lines.

Country unknown.

Fam. PLUSIDÆ, Boisd.

Genus Radara, n. g.

Mas.—Corpus gracile. Fasciculus frontalis productus. Proboscis distincta. Palpi compressi, caput longissimè superantes. Antennæ densè pubescentes. Abdomen cylindricum, sub-carinatum, lateribus posticis fasciculatis. Pedes longi, graciles; tibiæ posticæ calcaribus quatuor longis. Alæ latiusculæ; anticæ rectangulatæ, costâ intermediâ subdepressâ.

Male.—Body slender. Frontal tuft prominent. Proboscis distinct. Palpi long, compressed, extending very far beyond the head; 3rd joint lanceolate, shorter and more slender than the 2nd. Antennæ thickly pubescent. Abdomen cylindrical, slightly keeled, with minute tufts on each side towards the tip; apical tufts longer than the preceding pairs. Legs long, slender; hind tibiæ with four long spurs. Wings rather broad. Fore-wings

rectangular; costa slightly depressed in the middle; exterior border slightly oblique.

This genus seems to be somewhat allied to the *Herminidæ*.

Radara vacillans.

Mas.—Cinereo-cervina, abdominis segmentis albo-marginatis, alis anticis albido fuscoque quadrilineatis, lineis duabus rectis obliquis albidis fusco-marginatis, lineis interiore et exteriore fuscis deviis incompletis, guttâ discali nigricante, costâ albo-tripunctatâ, alis posticis cinereo-fuscis.

Male.—Cinereous fawn-colour, more cinereous beneath. Abdominal segments white-bordered. Fore-wings with two straight oblique whitish brown-bordered lines, which converge hindward; interior and exterior lines brown, slight, irregular, incomplete; a blackish discal dot near the outer border of the 1st line; costa with three white points near the tip; marginal line dark brown, as it is also in the cinereous brown hind wings.

Length of the body 6 lines; of the wings 12 lines.

Cape.

Fam. GONOPTERIDÆ, Guén.

Genus Cottobara, n. g.

Fœm.—Corpus robustum. Proboscis distincta. Palpi lineares, obliquè ascendentes, articulo 3o sub-obsoleto. Antennæ glabræ, longiusculæ. Abdomen alas posticas sat superans. Pedes robusti, læves; tibiæ posticæ calcaribus quatuor longis. Alæ anticæ rectangulatæ, costâ rectâ basi convexâ.

Female.—Body stout. Proboscis distinct. Palpi linear, obliquely ascending, not rising higher than the front; 3rd joint almost obsolete. Antennæ smooth, rather long. Abdomen extending rather beyond the hind-wings. Legs stout, smooth; hind-tibiæ with four long spurs. Wings rather broad. Fore-wings rectangular; costa straight, slightly convex towards the base; exterior border hardly oblique, except towards the interior angle.

Allied to *Anomis*, Hubn.

Cottobara concinna.

Fœm.—Rufescente cervina, thorace antico saturatè ferrugineo-rufo, alis anticis testaceo-quadrilineatis, puncto discali interiore testaceo, reniformi e punctis duabus nigris albo-notatis, lineâ sub-marginali e punctis albis nigro-notatis, alis posticis nigricante fuscis.

Female.—Reddish fawn-colour. Thorax in front deep ferruginous red. Wings beneath brown, with pale cinereous borders. Fore-wings paler hindward, with four oblique but not parallel testaceous lines; a testaceous point between the 1st and 2nd lines; reniform mark distinguished by two black white-marked points between the 2nd and 3rd lines; sub-marginal line composed of white black-marked points. Hind-wings blackish-brown; fringe cinereous.

Length of the body 5 lines; of the wings 12 lines.

Amazon Region.

Fam. AMPHIPYRIDÆ, Guén.

Genus Gaphara, n. g.

Mas.—Corpus robustum. Proboscis valida. Palpi erecti, subarcuati, caput non superantes, articulo 3o lanceolato. Antennæ simplices. Abdomen alas posticas paullò superans. Pedes robusti; tibiæ posticæ calcaribus quatuor longis. Alæ margine exteriore subflexo; anticæ sub-quadratæ.

Male.—Body stout. Proboscis robust. Palpi vertical, slightly curved, not rising higher than the head; 3rd joint lanceolate, about half the length of the 2nd. Antennæ simple. Abdomen extending a little beyond the hind-wings. Legs stout; hind tibiæ with four long spurs. Wings moderately broad; exterior border very slightly bent. Fore-wings sub-quadrate at the tips.

Allied to *Amphipyra*.

Gaphara sobria.

Mas.—Cinereo-fusca, alis anticis lineis interiore et exteriore nigricantibus sub-undulatis albido diffusè marginatis, lineâ submarginali nigricante dentatâ extus luteo-marginatâ, orbiculari et reniformi sub-luteis fusco-marginatis, alis posticis albidis fusco-marginatis.

Male.—Cinereous-brown. Abdomen cinereous. Fore-wings with the interior and exterior lines blackish, slightly undulating, very diffusely whitish-bordered; sub-marginal line blackish, dentate, luteous-bordered on the outer side; orbicular and reniform marks slightly luteous, brown-bordered, the former large and round. Hind-wings whitish, with diffuse brown borders; underside with a blackish discal dot.

Length of the body 5 lines; of the wings 12 lines.

Country unknown.

Genus Nænia, Steph.

Nænia signiplena.

Mas.—Ferruginea, alis anticis lineis duabus subrectis subobliquis fasciisque duabus deviis interruptis nigricante fuscis cinereo-marginatis, fasciâ 3â marginali fuscâ pallido-marginatâ lineam marginalem obscuriorem includente, alis posticis cinereo-fuscis liturâ discali nigricante.

Male.—Ferruginous, cinereous speckled, with a luteous tinge beneath. Palpi stout, obliquely ascending, 3rd joint conical, about one-fourth of the length of the 2nd. Antennæ rather long, minutely ciliated. Legs with black bands; middle tibiæ mostly thickly tufted with pale hairs; hind-tibiæ with two pair of spurs of unequal length, one of the 1st pair extremely long. Fore-wings acute, with two blackish-brown, cinereous-bordered, slightly oblique, nearly straight and parallel lines which intersect two interrupted and very irregular bands of the same colour; 3rd band marginal, brown, also pale-bordered, deeply dentate, blackish-brown by the costa, inclosing a blackish-brown, pale-bordered marginal line composed of small triangles; underside with some vestiges of the above markings. Hind-wings cinereous brown, with a blackish discal mark and a pale fringe; discal mark much more conspicuous beneath, where there is an exterior line of black pale-bordered dots.

Length of the body 5 ? lines; of the wings 12 lines.

Amazon Region.

Fam. HOMOPTERIDÆ, Boisd.

Genus Homoptera, Boisd.

Homoptera discalis.

Fœm.—Ferrugineo-fusca; alis cinereo-conspersis lineâ submarginali atrâ, lineâ mediâ minus conspicuâ, alis anticis acutis, margine exteriore flexo, lineâ interiore nigrâ undulatâ, orbiculari et reniformi albo-marginatis, alis posticis pallido extus bilineatis.

Female.—Ferruginous-brown. Frontal tuft prominent, angular. Palpi very long, obliquely ascending; 2nd joint thickly fringed with short hairs beneath; 3rd linear, much more slender than the 2nd and hardly half its length. Wings with numerous pale cinereous speckles, which are most prevalent on the fore-wings and appear only towards the base of the hind-wings; sub-marginal line deep black, most conspicuous on the fore-wings; middle line

less distinct; marginal points black; marginal space speckled with pale fawn-colour; underside with numerous irregular luteous speckles. Fore-wings acute; exterior border distinctly bent; interior line black, undulating; orbicular and reniform marks large, white-bordered, most distinct on the underside. Hind-wings with two exterior parallel, nearly contiguous pale lines. Underside with a white discal mark.

Length of the body 6 lines; of the wings 16 lines.

Brazil.

Homoptera gratiosa.

Fœm.—Obscurè fusca, alis purpurascente sub-tinctis, margine exteriore sub-dentato, lineis quatuor nigris undulatis testaceo-marginatis, punctis marginalibus nigris albido-notatis, reniformi hyalino notatâ, alis anticis strigâ basali nigrâ, punctis tribus costalibus sub-apicalibus.

Female.—Dark brown, cinereous beneath towards the base of the wings. Palpi very long; 3rd joint linear, more slender and rather shorter than the 2nd. Wings slightly purplish-tinged, with the exterior border slightly dentate; the four lines black, undulating, testaceous-bordered, more or less diffuse; interior line contiguous to a short black streak, which proceeds from the hinder base of the fore-wings; exterior line reflexed towards the costa of the fore-wings; sub-marginal line less distinct than the others; marginal points black, whitish marked; reniform mark of the usual shape, with a white hyaline disk, very small and indistinct in the hind-wings; underside with the lines obsolete, except the exterior line, which is distinct and limits the testaceous streaks which prevail towards the base. Fore-wings with three costal sub-apical points; underside with three white dots near the fore end of the exterior border.

Length of the body $4\frac{1}{2}$ lines; of the wings 10 lines.

Amazon Region.

Homoptera punctilinea.

Mas.—Fusca, subtus cinerea, sat robusta, palpis porrectis parvis, antennis sub-ciliatis, abdomine acuminato, calcaribus longissimis, alis anticis nigro-conspersis et nebulosis, orbiculari et reniformi nigris parvis, lineis quatuor pallide cervinis nigro-marginatis, 1a, 2aque sub-undulatis, 3a flexa, 4a angulata indistincta, lunulis punctisque marginalibus nigris.

Male.—Brown, cinereous beneath, moderately stout. Palpi porrect, short; 3rd joint minute. Antennæ minutely ciliated.

Abdomen acuminated, not extending beyond the hind-wings. Hind-tibiæ with very long apical spurs. Wings moderately broad. Fore-wings with minute black speckles, which are confluent between the basal and interior lines and about the apical part of the costa; orbicular and reniform marks black, small; four pale fawn-coloured black-bordered lines; basal and exterior lines slightly undulating; exterior line angular, bent; sub-marginal line zigzag, more indistinct; marginal lunules black, accompanied by black points; fringe long, full. Hind-wings black-speckled, with marginal lunules and with some traces of the other lines.

Length of the body $3\frac{1}{2}$ lines; of the wings 9 lines.

Brazil.

Fam. POAPHILIDÆ, Guén.

Genus Condate, n. g.

Fœm.—Corpus robustum. Proboscis brevis. Palpi obliquè ascendentes, compressi, longissimi; articulus 3us lanceolatus, 2o brevior. Thorax squamosus. Abdomen alas posticas non superans. Pedes robusti; tibiæ posticæ calcaribus quatuor longissimis. Alæ breviusculæ, latiusculæ; anticæ vix falcatæ, costâ subrectâ, margine exteriore vix obliquo.

Female.—Body stout. Proboscis short. Palpi compressed, very long, obliquely ascending, rising much higher than the head; 2nd joint elongate-fusiform; 3rd lanceolate, shorter than the 2nd. Thorax squamous. Abdomen conical, not extending beyond the hind-wings. Legs stout, not long; hind-tibiæ with two pair of very long spurs. Wings rather short and broad. Fore-wings hardly falcate; costa almost straight; exterior border convex, hardly oblique.

Allied to *Poaphila*, Guén.

Condate hypenoides.

Fœm.—Obscurè cinereo-rufescens, alis nigro-conspersis purpurascente sub-tinctis, lineâ exteriore rufâ sub-rectâ flavescente marginatâ, lineâ sub-marginali angulosa vix conspicuâ, alis anticis lineâ interiore sub-undulata, reniformi e guttis duabus nigris pallidè marginatis, maculis duabus exterioribus nigris diffusis.

Female.—Dark cinereous-reddish, brownish-cinereous beneath. Wings minutely black-speckled, slightly purplish-tinged; exterior line brighter red, yellowish-bordered, nearly straight; submarginal line zig-zag, very indistinct; marginal points black, yel-

lowish-marked. Fore-wings with black marks along the costa; interior line much like the exterior one, but slightly undulating; reniform mark composed of two black, pale-bordered dots; exterior line with two diffuse black spots by its outer border, one discal, the other costal.

Length of the body 5 lines; of the wings 12 lines.

China.

Genus Phurys, Guén.

Phurys continua.

Mas.—Cinereo-fusca, alis liturâ discali nigricante, alis anticis acutis vix falcatis, lineis interiore et exteriore sub-obliquis fere rectis pallidè cinereis, lineâ submarginali undulatâ, alis posticis lituris nullis.

Male.—Cinereous-brown, paler beneath. Proboscis rather long. Palpi porrect, extending rather beyond the head; 3rd joint elongate, conical, more than half the length of the 2nd. Antennæ simple. Legs thick; tarsi slender; hind-tibiæ with four long spurs. Wings with a pale marginal line at the base of the fringe; discal mark blackish, most distinct on the underside of the hind-wings. Fore-wings acute, hardly subfalcate; interior and exterior lines pale cinereous, nearly straight and parallel, slightly oblique; sub-marginal line undulating, less distinct. Hind-wings without markings.

Length of the body 5 lines; of the wings 14 lines.

Genus Asthana, n. g.

Mas.—Corpus sat gracile. Proboscis brevis. Palpi longi, compressi, oblique ascendentes, frontem paullò superantes; articulus 3us conicus, brevissimus. Antennæ pectinatæ, ramis pubescentibus. Thorax tegulis quadratis. Abdomen longissimum, sub-cylindricum, alas posticas longe superans. Pedes longiusculi, calcaribus inæqualibus. Alæ latiusculæ; anticæ sub-rotundatæ, costâ ferè rectâ, margine exteriore vix obliquo.

Male.—Body rather slender. Proboscis short. Palpi long, compressed, obliquely ascending, rising a little higher than the front; 3rd joint conical, about one-sixth of the length of the 2nd. Antennæ moderately pectinated to the tips; branches pubescent. Tegulæ of the thorax quadrate. Abdomen very long, nearly cylindrical, extending far beyond the hind-wings. Legs rather long; spurs of unequal length, one of the 1st pair very long.

Wings rather broad. Fore-wings slightly rounded at the tips; costa almost straight; exterior border hardly oblique.

Allied to *Mocis*, Hubn.

Asthana erecta.

Mas.—Pallidè cervina, capite thoraceque antico obscurioribus, alis anticis lineis interiore et sub-marginali fuscescentibus undulatis indistinctis, maculâ posticâ nigricante, fasciâ submarginali fuscâ rectâ optimè determinatâ non obliquâ, orbiculari nigrâ punctiformi, reniformi e punctis duobus nigris.

Male.—Pale fawn-colour, pale luteous beneath. Head and forepart of the thorax deeper fawn-colour. Wings with black marginal points. Fore-wings with the interior and the submarginal lines brownish, slender, undulating, indistinct, the latter terminating hindward in a blackish spot, which adjoins a straight, upright, very distinct brown band; orbicular mark black, punctiform; reniform mark of two black points. Hind-wings beneath with a blackish discal mark, and an exterior curved blackish line, which is also apparent beneath the fore-wings.

Length of the body 6 lines; of the wings 12 lines.

Country unknown.

Asthana directa.

Mas.—Pallidè cinerea, capite thoracisque tegulis cervinis, his nigricante marginatis, palpis ascendentibus articulo 3o parvo, antennis serratis ciliatis, abdomine longo attenuato, alis anticis acutis nigricante sub-conspersis, guttis duabus discalibus unâque basali liturisque duabus obliquis costalibus nigris, lineâ exteriore cervinâ subrectâ vix obliquâ nigricante marginatâ, lineâ sub-marginali tenui angulosâ punctisque marginalibus nigris.

Male.—Pale cinereous, slender. Head fawn-colour. Palpi fawn-colour, compressed, fringed, ascending, rising higher than the vertex; 3rd joint conical, much more slender than the 2nd, and about one-fourth of its length. Antennæ serrate, ciliate. Tegulæ of the thorax fawn-coloured, blackish bordered. Abdomen thickly brown-speckled, attenuated, extending much beyond the hind-wings. Tibiæ slightly dilated; tarsi much longer than the tibiæ; spurs long. Fore-wings acute, thinly and irregularly blackish-speckled, with a black discal dot near the base, with two black dots representing the reniform mark, with two black oblique costal marks, and with a fawn-coloured, almost straight and upright exterior line, which is blackish-bordered on both sides

and is connected with a costal mark by a little streak on the inner side; sub-marginal line black, slender, zigzag; marginal points black; costa and exterior border hardly convex; interior angle well defined. Hind-wings brownish along the exterior border; marginal points blackish, larger than those of the fore-wings; underside with a blackish discal point, and a blackish curved exterior line.

Length of the body 6 lines; of the wings 12 lines.

Brazil.

Genus Baniana.

Baniana, Cat. Lep. Het. 3rd Ser. 1843.

Sect. 2.

Mas.—Corpus sat gracile. Fasciculus frontalis productus. Proboscis distincta. Palpi obliquè ascendentes, frontem non superantes, articulo 3o minimo. Antennæ longiusculæ, sub-pectinatæ. Abdomen alas posticas longè superans. Pedes longiusculi, sat robusti. Alæ anticæ acutæ, vix falcatæ.

Male.—Body rather slender. Frontal tuft prominent. Proboscis distinct. Palpi obliquely ascending, not rising higher than the front; 2nd joint broad; 3rd conical, not more than one-eighth of the length of the 2nd. Antennæ rather long, slightly pectinated. Abdomen cylindric-conical, extending much beyond the hind-wings. Legs rather long and stout; hind-tibiæ with the 1st pair of spurs much longer than the 2nd. Wings rather small. Fore-wings acute, but hardly falcate; costa straight; exterior border convex, moderately oblique. Hind-wings rounded.

Baniana inæqualis.

Mas.—Cinerascente-cervina, alis anticis nigro-lineatis, guttâ basali nigrâ, lineâ interiore pallido-marginatâ apud costam posticèque dilatatâ, lineâ exteriore costam versus obsoletâ intus pallido-marginatâ extus diffusâ, reniformi magnâ, orbiculari punctiformi, alis posticis cinereo-fuscis.

Male.—Fawn-colour, slightly tinged with cinereous, cinereous brown beneath. Fore-wings with a black basal dot, and with a black, pale-bordered interior line, which is much dilated on the costa, and still more hindward, where it forms a triangular black spot; exterior line black, obsolete towards the costa, concisely pale-bordered on the inner side, diffuse on the outer side, intersecting the reniform mark, which is large and open; orbicular

mark forming a black, pale-bordered point; sub-marginal line blackish, zigzag; marginal lunules black. Hind-wings cinereous brown.

Length of the body 6 lines; of the wings 12 lines.

Brazil.

Genus Gammace, n. g.

Mas.—Corpus robustum. Proboscis longiuscula. Palpi porrecti, longissimi; articulus 3us linearis, acuminatus, 2i dimidio longior. Antennæ ciliatæ. Abdomen alas posticas sat superans. Pedes longiusculi, sat graciles, calcaribus quatuor longis. Alæ latiusculæ, non longæ; anticæ sub-rotundatæ.

Male.—Body stout. Proboscis rather long. Palpi porrect, very long, extending very far beyond the head; 3rd joint linear, acuminated at the tip, more slender than the 2nd, and more than half its length. Antennæ ciliated. Abdomen elongate-conical, extending rather beyond the hind-wings. Legs rather long and slender; hind-tibiæ with four long spurs. Wings rather broad, not long. Fore-wings slightly rounded at the tips; exterior border slightly convex and oblique.

Allied to *Baniana*.

Gammace magniplaga.

Mas.—Cinereo-cervina, capite fusco, thoracis tegulis nigricante fuscis, fasciculo apicali nigricante æneo, alis lineâ exteriore fuscescente lunulatâ, lineâ sub-marginali e punctis nigris, alarum anticarum plagâ costali magnâ sub-apicali nigricante fuscâ albido-marginatâ, orbiculari parvâ fuscâ, reniformi magnâ elongatâ albido-marginatâ.

Male.—Cinereous fawn-colour, more cinereous beneath. Head brown. Thorax with blackish-brown tegulæ, and with an apical tuft of blackish æneous plumes. Wings with the exterior line brownish, composed of lunules, more distinct on the underside; a sub-marginal line of black points; marginal points also black. Fore-wings with a large costal, sub-apical, blackish-brown, whitish-bordered patch; orbicular mark brown, punctiform; reniform mark large, elongated, whitish-bordered, adjoining the patch.

Length of the body 7 lines; of the wings 14 lines.

Brazil.

Fam. REMIGIDÆ, Guén.

Genus Remigia, Guén.

Remigia consistens.

Cinerea, cervino-subtincta, capite thoraceque antico fuscescente cinereis, antennis sub-pubescentibus, alis nigricante conspersis, lineâ interiore indistinctâ, lineâ exteriore fuscâ rectâ distinctâ costam versus dentatâ et retractâ, lineâ sub-marginali angulosâ nigricante guttatâ, margine exteriore vix angulato, alis anticis sub-falcatis, reniformi parvâ albâ fusco-marginatâ.

Cinereous, with a slight tinge of fawn-colour. Head and forepart of the thorax brownish cinereous. Third joint of the palpi about half the length of the 2nd. Antennæ thinly pubescent. Wings minutely blackish-speckled; interior line indistinct; exterior line brown, straight, distinct, dentate and abruptly retracted towards the costa; sub-marginal line zigzag, indistinct, with the exception of the black dots by which it is marked; marginal festoon brown, pale-bordered; exterior border hardly angular. Fore-wings sub-falcate, with a diffuse blackish mark between the exterior line and the sub-marginal line, and opposite the reniform mark; the latter small, white, brown-bordered, excavated on the outer side.

Length of the body 6 lines; of the wings 18 lines.

Brazil.

Genus Gangra, n. g.

Fœm.—Corpus sat robustum. Proboscis mediocris. Palpi validi, obliquè ascendentes, caput non superantes; articulus 3us linearis, brevissimus. Antennæ simplices. Abdomen alas posticas non superans. Pedes robusti; tibiæ posticæ calcaribus quatuor longis. Alæ anticæ sub-falcatæ, margine exteriore subflexo.

Female.—Body rather stout. Proboscis moderately long. Palpi stout, obliquely ascending, not rising higher than the head; 3rd joint linear, not more than one-sixth of the length of the 2nd. Antennæ simple. Abdomen not extending beyond the hind-wings. Legs stout; hind-tibiæ with four long spurs. Wings moderately broad. Fore-wings sub-falcate; exterior border very slightly bent.

Allied to *Remigia*, Guén.

Gangra atripustula.

Fœm.—Cervina, subtus lutea, alæ lineis tribus nigricantibus denticulatis albido-marginatis, alis anticis orbiculari albidâ punctiformi, reniformi magnâ oblongâ albido sub-marginatâ, alis posticis maculâ discali interiore magnâ atrâ albido-marginatâ.

Female.—Fawn-colour, luteous beneath. Fore-legs brown, with whitish bands. Wings with the interior, exterior and sub-marginal lines blackish, denticulated, whitish-bordered, most distinct on the underside; marginal points black. Fore-wings with the orbicular mark whitish, punctiform; reniform mark large, oblong, incompletely whitish-bordered. Hind-wings with a large deep black, whitish-bordered discal spot on the interior line.

Country unknown.

Fam. FOCILLIDÆ, Guén.

Genus Focilla, Guén.

Focilla abrupta.

Mas.—Fuscescente ferruginea, fasciculo frontali obtuso albido-marginato, alis margine exteriore anticè recto, posticè bisinciso, lineis interiore et exteriore fuscis undulatis angulatis luteo-marginatis costam versus abruptè retractis, lineâ mediâ nigricante undulatâ indistinctâ, alis anticis spatio apicali cervino strigam fuscescente ferrugineam maculamque costalem pallidam trigonam includente.

Male.—Brownish-ferruginous, with a slight cinereous tinge. Front very prominent, slightly whitish-bordered, obtuse at the tip. Wings with the exterior border straight in front, with two excavations hindward; interior and exterior lines brown, undulating, angular, luteous-bordered, abruptly retracted towards the costa of the fore-wings; middle line blackish, undulating, indistinct; sub-marginal points whitish, black-marked; underside with a single, straight, oblique, brown whitish-bordered line. Fore-wings with the apical part fawn-colour; this space including a brownish-ferruginous streak, and a pale triangular costal spot, reniform mark large, oblong, pale fawn-colour, with a brownish disk.

Length of the body 6 lines; of the wings 16 lines.

Amazon Region.

Fam. AMPHIGONIDÆ, Guén.

Genus Episparis.

Episparis, Cat. Lep. Het. 3rd Ser. 475, 1712.

Episparis exprimens.

Mas.—Ochracea, subtus albida, fasciculo frontali producto, tibiis posticis densissimè fasciculatis, alarum lineis tribus obscurioribus sub-obsoletis, lineâ sub-marginali albâ intus e atomis albis diffusè marginatâ, orbiculari parvâ nigricante fuscâ, alis anticis lineâ interiore angulatâ, reniformi albâ hyalinâ.

Male.—Ochraceous, whitish beneath. Frontal tuft prominent. Palpi obliquely ascending; 3rd joint conical, hardly one-fourth of the length of the 2nd. Antennæ moderately pectinated to three-fourths of the length; hind-tibiæ most densely tufted. Wings with three almost obsolete darker ochraceous lines; a white sub-marginal line, which is curved in front, and forms one angle in each wing, and is diffusely bordered with white speckles on the inner side; orbicular mark small, blackish-brown. Fore-wings with an abruptly angular interior white line, with elongated white marks along the costa, and with a white, hyaline, reniform mark, which is curved and attenuated in front. Hind-wings with an exterior rectangular white line.

Length of the body 7 lines; of the wings 18 lines.

Hindostan.

Fam. THERMESIDÆ, Guén.

Genus Thermesia, Hübn.

Thermesia? absumens.

Mas.—Rufescente-cinerea, palpis longissimis, articulo 2o fasciculato, alis latis, lineâ exteriore rectâ cinereâ intus ferrugineo-marginatâ costam versus angulatâ, margine exteriore vix angulato, alis anticis sub-falcatis, reniformi magnâ atrâ excavatâ.

Male.—Reddish-cinereous. Palpi ascending, nearly twice the length of the breadth of the head; 3rd joint much shorter than the 2nd, tufted above. Antennæ slender, simple. Wings broad, with a cinereous straight exterior line, which is ferruginous-bordered on the inner side, and is abruptly angular towards the costa of the fore-wings; exterior border hardly angular. Fore-wings

acute, sub-falcate; costa testaceous, brown-speckled; reniform mark deep black, large, excavated on the outer side. Hind-wings with a black discal point.

Length of the body 5 lines; of the wings 14 lines.

Amazon Region.

Genus Selenis, Guén.

Selenis divisa.

Cinereo-fusca, capite thoraceque antico obscurè fuscis, thorace postico abdomineque basi albido-luteis, alarum lineis nigricantibus dentatis vix conspicuis, alarum anticarum vittâ costali latâ albido-luteâ.

Cinereous-brown. Head and forepart of the thorax dark brown; the rest of the thorax and the base of the abdomen whitish-luteous, forming a continuous line with the broad, whitish-luteous costal stripe of the fore-wings. Palpi stout, vertical, rising a little higher than the vertex; 3rd joint conical, not more than one-sixth of the length of the 2nd. Wings with some ochraceous marks about the exterior border; lines blackish, dentated, very indistinct; marginal points black.

Length of the body $2\frac{3}{4}$ lines; of the wings 8 lines.

Hindostan.

Genus Marthama.

Marthama, Cat. Lep. Het. 3rd Ser. 1630

Sect. 2.

Fœm.—Corpus robustum. Proboscis valida. Palpi porrecti, caput longè superantes; articulus 3us sub-linearis, 2i dimidio non brevior. Antennæ longæ, sub-pectinatæ, ramis ciliatis. Pedes robusti; tibiæ posticæ calcaribus quatuor longis. Alæ amplæ; anticæ rectangulatæ, costâ rectâ, margine exteriore flexo; posticæ angulo interiore producto.

Female.—Body stout. Proboscis robust. Palpi long, porrect, extending far beyond the head; 2nd joint with a short, thick fringe; 3rd nearly linear, full half the length of the 2nd. Antennæ long, slightly pectinated; branches ciliated. Abdomen conical. Legs robust; hind-tibiæ with four long spurs. Wings ample. Fore-wings rectangular; costa straight, exterior border distinctly bent, its hind part moderately oblique. Hind-wings with the interior angle prolonged, extending a little beyond the tip of the abdomen.

Marthama conspersa.

Fœm.—Obscurè ferruginea, albido sub-conspersa, alarum marginibus albido-punctatis, alarum anticarum lineis fasciisque ex atomis albidis, lineâ exteriore valde flexâ, costâ exteriore albo tripunctatâ.

Female.—Dark ferruginous, thinly whitish-speckled, brown beneath. Tarsi with whitish bands. Wings with marginal whitish points. Fore-wings with diffuse lines and bands of whitish speckles; exterior line much bent, formed of whitish points; costa with three white points towards the tip; a triangular space near the tip of the costa almost without speckles; underside with four lines of whitish points. Hind-wings with two lines of whitish points.

Length of the body 5 lines; of the wings 16 lines.

Amazon Region.

Fam. HYPENIDÆ, Herr.-Sch.

Genus Hypena, Schr.

Hypena bisignalis.

Mas.—Cinereo-fusca, palpis porrectis lanceolatis thorace non brevioribus, articulo 2o late fimbriato, antennis sub-pubescentibus, alis fusco-lineatis, lunulis marginalibus nigris, alis anticis sub-falcatis, linea sub-marginali sat determinata subundulata, orbiculari et reniformi nigris, illa punctiformi.

Male.—Cinereous-brown. Palpi porrect, lanceolate, as long as the thorax; 2nd joint broadly fringed; 3rd joint very acute, slightly fringed, about one-third of the length of the 2nd. Antennæ minutely pubescent. Abdomen not extending beyond the hind-wings. Wings not broad; lines brown; marginal lunules black. Fore-wings sub-falcate; exterior line very indistinct; submarginal line more distinct, slightly undulating; orbicular and reniform marks black, the former punctiform. Hind-wings paler than the fore-wings, except towards the exterior border; exterior line distinct, almost straight.

Length of the body $3\frac{1}{2}$ lines; of the wings 10 lines.

Brazil.

Hypena pyralalis.

Fœm.—Cinereo-fusca, palpis porrectis elongatis articulo 3o longi-conico, alis anticis acutis ochraceo alboque quadrifasciatis, fasciis deviis incompletis, alis posticis pallidè cinereis.

Female.—Cinereous-brown. Palpi porrect, longer than the breadth of the head; 3rd joint elongate-conical, about one-third of the length of the 2nd. Abdomen not extending beyond the hind-wings. Fore-wings acute, with four irregular and incomplete ochraceous and white bands; costa straight; exterior border convex, very oblique hindward. Hind-wings pale cinereous.

Length of the body $2\frac{1}{2}$ lines; of the wings 7 lines.

This species forms a new section and differs much from the typical form of the genus.

Brazil.

Hypena Æmusalis.

Fœm.—Fuscescente cinerea, palpis porrectis longissimis, alis anticis acutis vix falcatis, lineis basali et interiore nigris undulatis, spatio intermedio obscure fusco, linea arcuata nigra apud angulum interiorem.

Female.—Brownish-cinereous. Palpi porrect, full twice longer than the breadth of the head; 3rd joint slender, linear, as long as the 2nd. Abdomen not extending beyond the hind-wings. Fore-wings acute, almost sub-falcate; basal and interior lines black, undulating; space between them mostly dark brown; a curved black line extending from the exterior border to the interior border and inclosing a small space about the interior angle; costa straight; exterior border convex hindward. Hind-wings without markings.

Length of the body 5 lines; of the wings 14 lines.

Cape.

Hypena? murina.

Mas.—Murina, sat gracilis, fronte tumida, antennis sub-setulosis, abdomine sub-attenuato, alis anticis apice rotundatis, orbiculari et reniformi e guttis duabus nigris, linea exteriore nigra undulata non obliqua, linea sub-marginali cinerea angulosa indistincta, linea marginali e lunulis nigris, costa cinereo-notata.

Male.—Cinereous-brown or mouse-colour, rather slender, front tumid. Antennæ very minutely setulose. Abdomen somewhat attenuated, extending a little beyond the hind-wings. Hind-tibiæ with long spurs. Fore-wings rounded at their tips, with the reniform mark distinguished by two black dots; exterior line black, slender, undulating, upright; sub-marginal line cinereous, zigzag, indistinct; marginal line composed of slender black lunules; costa

straight, with pale cinereous marks; exterior border slightly convex and oblique. Hind-wings without markings.

Length of the body 4 lines; of the wings 9 lines.

Brazil.

Genus Boana, n. g.

Fœm.—Corpus gracile. Fasciculus frontalis productus, acutus. Proboscis brevis, distincta. Antennæ graciles, glabræ. Abdomen alas posticas non superans. Pedes glabri, longiusculi; tibiæ posticæ calcaribus quatuor longis. Alæ amplæ; anticæ sub-falcatæ, margine exteriore vix obliquo, margine interiore sub-convexo; posticæ valde rotundatæ, costa convexa.

Female.—Body slender. Frontal tuft prominent, acute. Proboscis short, distinct. Antennæ slender, bare. Abdomen not extending beyond the hind-wings. Legs smooth, rather long; hind tibiæ with long spurs. Wings ample. Fore-wings subfalcate; costa straight; exterior border hardly oblique; interior border slightly convex. Hind-wings very much rounded, broader than the fore-wings; costa convex.

Boana semialba.

Fœm.—Fusca, pedibus albido-testaceis, alis dimidio albis, alis anticis litura discali subrotunda obscure fusca, lineis duabus testaceis sub-undulatis fusco-marginatis antice remotis, punctis sub-marginalibus nigris albo-notatis.

Female.—Brown, paler beneath. Legs whitish testaceous. Fore-wings with two testaceous, dark brown-bordered, slightly undulating and oblique lines, the exterior one diverging in front from the interior one; discal mark dark brown, nearly round; a row of submarginal black, white-marked points; underside white, except in front. Hind-wings white in front, over much more than one-half of the surface.

Length of the body 3 lines; of the wings 9 lines.

Brazil.

Fam. HERMINIDÆ, Guén.

Genus Sophronia, Guén.

Sophronia? Capensis.

Mas.—Pallidè cervina, gracilis, palpis ascendentibus compressis longis sub-arcuatis, articulis 1o et 2o fimbriatis, 3o lanceo-

lato, antennis dense pubescentibus, abdomine alas posticas paullò superante, alis linea sub-marginali albida sub-recta, linea marginali tenui e lunulis fuscis, alis anticis acutis linea media recta obliqua lineaque sub-marginali postice approximatis.

Male.—Pale fawn-colour, slender. Palpi compressed, long, vertical, slightly curved; 1st and 2nd joints fringed; 3rd lanceolate, as long as the 2nd. Antennæ thickly pubescent. Abdomen extending a little beyond the hind-wings. Legs rather stout; spurs long. Wings with a whitish nearly straight sub-marginal line; marginal line brown, composed of slender lunules. Fore-wings acute, with a straight oblique middle line, which approaches the sub-marginal line hindward; costa straight; exterior border convex, slightly oblique.

Length of the body 6 lines; of the wings 12 lines.

Cape.

Genus Bononia, n. g.

Mas.—Corpus sat robustum. Proboscis brevis, gracilis. Palpi longi, compressi, erecti; articulus 3us lanceolatus, 2i dimidio brevior. Antennæ latè pectinatæ. Abdomen sub-carinatum, alas posticas superans; fasciculus apicalis longus, compressus. Pedes robusti; tibiæ posticæ calcaribus quatuor longis. Alæ amplæ; anticæ acutæ; posticæ valde rotundatæ.

Male.—Body moderately stout. Proboscis short, slender. Palpi long, compressed, vertical, ascending high above the head, with short hairs; 3rd joint lanceolate, much more slender than the 2nd and less than half its length. Antennæ broadly pectinated. Abdomen slightly keeled, extending rather beyond the hind-wings; apical tuft long, compressed. Legs very robust; spurs long, stout. Wings ample. Fore-wings acute; costa straight; exterior border slightly convex and oblique. Hind-wings with the exterior border very convex; angles much rounded.

Bononia niveilinea.

Mas.—Læte cervina, abdomine alisque posticis cinereo-cervinis pallidioribus, alis anticis albo bi-vittatis, striga exteriore costaque albis.

Male.—Bright fawn-colour. Abdomen and hind-wings paler cinereous fawn-colour. Fore-wings with a white costa, with two white stripes; hinder stripe slightly undulating; fore-stripe bent,

interrupted at the bend with a white streak in front of its exterior end.

Length of the body 6 lines; of the wings 15 lines.

Brazil.

Genus Herminia, Latr.

Herminia inostentalis.

Mas.—Fuscescente cinerea, palpis longis angustis ascendentibus sub-fimbriatis, antennis setosis incurvis fasciculo ornatis, tibiis anticis fasciculo denso penicillato, alis sat angustis, lunulis marginalibus nigricantibus, alis anticis acutis nigro sub-conspersis, lineis interiore et exteriore fuscis angulosis indistinctis, spatio marginali fuscescente lineam pallidam angulosam sub-marginalem includente.

Male.—Brownish-cinereous. Palpi long, slender, rising high above the head, slightly fringed; 3rd joint much shorter than the 2nd. Antennæ setose, curved, with a tuft at one-third of the length. Abdomen compressed at the tip, extending very little beyond the hind-wings. Fore-tibiæ with a dense fan-shaped tuft. Wings rather narrow; marginal lunules blackish; fringe interlined. Fore-wings acute, thinly black-speckled; interior and exterior lines dark brown, zig-zag, indistinct; marginal space brownish, inclosing the pale zigzag sub-marginal line; reniform mark incomplete. Hind-wings paler than the fore-wings; lines less distinct.

Length of the body 3 lines; of the wings 10 lines.

Brazil.

Herminia ? figuralis.

Mas.—Cinereo-cervina, palpis porrectis lanceolatis thorace vix brevioribus, articulo 2o piloso, 3o nigricante brevi tenui, antennis pectinatis, alis fusco quinque lineatis, lunulis marginalibus nigris pallido-marginatis, margine exteriore angulato, alis anticis macula discali sub-rotunda subtus lunulata albo-marginata, costa pallido fuscoque notata.

Male.—Cinereous fawn-colour. Palpi porrect, lanceolate, almost as long as the thorax; 2nd joint pilose; 3rd blackish, slender, about one-fourth of the length of the 2nd. Antennæ rather broadly pectinated; branches ciliated. Abdomen not extending beyond the hind-wings. Wings with brown lines; interior line straight, oblique, abruptly retracted towards the costa of the fore-wings; basal line less distinct; middle, exterior and sub-marginal lines

slight, formed of lunules; marginal lunules black, pale-bordered; exterior border distinctly angular. Fore-wings rectangular at the tips, with a black nearly round discal spot, which on the underside forms a black white-bordered lunule; costa straight, with alternate elongated pale and brown streaks.

Length of the body 4 lines; of the wings 10 lines.

Brazil.

Genus Bleptina, Guén.

Bleptina responsalis.

Mas.—Fuscescente-cinerea, palpis corporis dimidio longioribus angulatis ascendentibus supra thoracem reflexis articulo 3o penicillato, alis linea sub-marginali recta obliqua nigricante; anticæ acutæ, margine exteriore convexo; posticæ pallidiores.

Male.—Brownish cinereous. Palpi much like those of *B. penicillalis*. Abdomen not extending beyond the hind-wings. Fore-wings acute; markings indistinct, except a blackish straight oblique sub-marginal line, which also appears on the paler hind-wings; exterior border convex, not angular.

Length of the body 4 lines; of the wings 10 lines.

Brazil.

Bleptina penicillalis.

Mas.—Fuscescente-cinerea, palpis corporis dimidio longioribus angulatis ascendentibus supra thoracem reflexis articulo 3o penicillato, alis anticis sub-falcatis, linea sub-marginali angulata pallidè cinerea nigricante marginata, litura discali parva pallida elongata, punctis marginalibus nigris, margine exteriore angulato.

Male.—Brownish-cinereous. Palpi much more than half the length of the body, angular, rising high above the head, reflexed over the thorax; 3rd joint longer than the 2nd, with a long fan-shaped apical tuft of hairs. Antennæ slender, smooth. Fore-wings sub-falcate, rather narrow; lines indistinct, except the sub-marginal line, which is pale cinereous, blackish-bordered, and forms a distinct angle in the middle; marginal points black; exterior border angular in the middle; discal mark minute, pale, elongated.

Length of the body 4 lines: of the wings 11 lines.

Brazil.

Bleptina intractalis.

Fœm.—Ferrugineo-fusca, palpis longis arcuatis ascendentibus pubescentibus articulo 3o lanceolato, pedibus glabris, alis anticis sat angustis apice rotundatis, lineis tribus pallidioribus indistinctis denticulatis vix obliquis, spatio medio pallidiore, reniformi nigricante antice attenuata, margine exteriore vix obliquo, alis posticis fuscescente cinereis litura discali lineisque subtus conspicuis.

Female.—Ferruginous-brown. Palpi compressed, pubescent, curved, rising high above the head and longer than its breadth; 3rd joint lanceolate, much shorter than the 2nd. Abdomen not extending beyond the hind-wings. Legs smooth. Wings rather narrow. Fore-wings rounded at the tips, with thin, denticulated, paler, indistinct, nearly upright lines; space between the interior and exterior lines mostly paler than the wings elsewhere; reniform mark blackish, attenuated in front; exterior border hardly oblique; interior angle much rounded. Hind-wings brownish-cinereous; underside with a brown discal mark and with brown denticulated exterior and sub-marginal lines.

Length of the body $4\frac{1}{2}$ lines; of the wings 12 lines.

Cape.

Bleptina? frontalis.

Mas.—Fusca, sat robusta, palpis ascendentibus longis compressis arcuatis articulo 3o lanceolato, antennis glabris, alis elongatis linea sub-marginali cinerea indistincta, alis anticis apice rotundatis, lineis duabus obscure fuscis angulosis, 2a cinereo-marginata, alis posticis cinereo-fuscis.

Male.—Brown, moderately stout, mostly cinereous beneath. Palpi smooth, compressed, curved over the head to the fore-border of the thorax; 3rd joint lanceolate, much shorter than the 2nd. Antennæ slender, bare. Abdomen not extending beyond the hind-wings. Legs smooth; spurs long. Wings elongate, not broad, with an indistinct cinereous sub-marginal line. Fore-wings rounded at the tips; costa hardly convex; exterior border convex, rather oblique; interior and exterior lines dark brown, zigzag, the latter cinereous-bordered. Hind-wings cinereous-brown.

Length of the body 5 lines; of the wings 14 lines.

Cape.

Genus Locastra, Walk.

Locastra rudis.

Mas.—Fusca, palpis verticem attingentibus, articulo 3o lanceolato brevi, thorace anticè flavescente, alis elongatis, lineâ submarginali nigrâ dentatâ undulatâ extus flavescente marginatâ lineâ exteriore subtus nigricante, alis anticis lineâ interiore nigrâ dentatâ intus flavescente marginatâ.

Male.—Brown, cinereous beneath. Palpi applied to the head and extending to the vertex; 3rd joint lanceolate, about one-fourth of the length of the 2nd. Thorax yellowish in front. Wings elongated, with the sub-marginal line black, dentate, very undulating, yellowish-bordered on the outer side; underside with a blackish exterior line. Fore-wings with yellowish speckles, and with a dentate black interior, which is broadly and diffusedly yellowish-bordered on the inner side.

Length of the body 5 lines; of the wings 14 lines.

Hindostan.

Genus Bertula, Walk.

Bertula excelsalis.

Mas.—Obscure fusca, fasciculo frontali erecto, palpis crassis fimbriatis longissimis ascendentibus reflexis articulo 3o penicillato, antennis setulosis, alis anticis acutis disco exteriore nigricante fusco, linea sub-marginali pallidè cinerea angulosa; alæ posticæ nigricante fuscæ, margine interiore fimbriato.

Male.—Dark brown. Frontal tuft vertical. Palpi thickly fringed, full half the length of the body, rising high above the head and bent over the thorax; 3rd joint longer than the 2nd, with a fan-shaped plume of hairs. Antennæ setulose. Abdomen extending beyond the hind-wings. Wings elongated. Fore-wings acute, blackish-brown on the exterior part of the disk; sub-marginal line pale-cinereous, zigzag; costa straight; exterior border convex, very oblique. Hind-wings blackish-brown; interior border with a long fringe.

Length of the body 7 lines; of the wings 16 lines.

Brazil.

Genus Bocana, Walk.

Bocana marginalis.

Mas.—Cinereo-cervina, palpis longissimis ascendentibus reflexis articulo 3o sub-clavato penicillato, antennis setulosis,

tibiis anticis densissimè fasciculatis, alis amplis fascia marginali integra pallidè cinerea, alis anticis acutis orbiculari et reniformi albis minimis fusco-marginatis.

Male.—Cinereous fawn-colour, more cinereous beneath. Palpi very long, rising high above the head and reflexed over the thorax; 2nd joint curved, with a small tuft near its tip; 3rd joint subclavate, almost as long as the 2nd, with a large fan-shaped tuft. Antennæ setulose. Abdomen extending beyond the hind-wings. Fore-tibiæ most densely tufted. Wings ample, with a straight pale cinereous band along the exterior border. Fore-wings acute; orbicular and reniform marks white, brown-bordered, very minute; costa straight; exterior border convex, hardly oblique.

Length of the body 8 lines; of the wings 18 lines.

Brazil.

Genus Gizama, Walk.

Gizama anticalis.

Mas.—Cinereo-fusca, sat gracilis, fasciculo frontali producto, palpis fimbriatis ascendentibus thorace vix brevioribus, antennis setosis rectis apices versus fasciculatis apice arcuatis, alis anticis apice rectangulatis, lineis duabus obscure fuscis sub-undulatis, hac angulosa, linea sub-marginali pallidè cinerea sub-angulosa, reniformi obscurè fusca annulari, alis posticis pallidioribus.

Male.—Cinereous-brown, rather slender, more cinereous beneath. Frontal tuft prominent. Palpi fringed, almost as long as the thorax, rising high above the head; 3rd joint much shorter than the 2nd. Antennæ setose, straight from the base to the sub-apical tuft, curved from thence to the tips. Abdomen not extending beyond the hind-wings. Wings ample; marginal lunules black. Fore-wings rectangular at the tips; interior and exterior lines dark brown, slightly undulating, the latter zigzag; sub-marginal line pale cinereous, slightly undulating and zigzag, more regular than the exterior line; reniform mark dark brown, annuliform; costa straight, exterior border convex, moderately oblique. Hind-wings paler than the fore-wings; sub-marginal line pale cinereous, nearly parallel to the exterior border.

Length of the body 6 lines; of the wings 16 lines.

Brazil.

Genus Crymona, n. g.

Mas.—Corpus sat robustum. Fasciculus frontalis productus. Proboscis longiuscula. Palpi lanceolati, sub-ascendentes; articulus 2us fasciculatus; 3us acutus, brevis. Antennæ setulosæ, rectæ, apices versus nodosæ et fasciculatæ, apice incurvæ. Abdomen alas posticas vix superans, fasciculo apicali parvo. Pedes longi, læves; tibiæ posticæ calcaribus longissimis. Alæ amplæ, elongatæ; anticæ acutæ; posticæ margine interiore plicato et fimbriato.

Male.—Body moderately stout. Proboscis rather long and robust. Frontal tuft prominent. Palpi lanceolate, slightly ascending, longer than the breadth of the head; 2nd joint tufted above; 3rd acute, about one-fourth of the length of the 2nd. Antennæ setulose, straight from the base to three-fourths of the length, where they are nodose, and tufted, curved from thence to the tips. Abdomen extending very little beyond the hind-wings; apical tuft small. Legs long, smooth; hind-tibiæ with very long spurs. Wings ample, elongated. Fore-wings acute; costa straight; exterior border slightly convex and oblique. Hind-wings with the interior border folded and fringed.

Crymona receptalis.

Mas.—Cervina, alis anticis macula discali parva elongata nigricante, lineis quatuor exterioribus e punctis nigricantibus, linea exteriore angulata obscure cervina, strigis exterioribus interruptis nigricantibus, alis posticis cinereis basi pallidioribus.

Male.—Fawn-colour. Fore-wings with a small longitudinally elongated blackish discal spot, and with four exterior transverse lines, which are formed of blackish points; 1st line very incomplete; a dark fawn-coloured angular line, accompanied by interrupted blackish streaks, on the veins between the 2nd and 3rd lines. Hind-wings cinereous, paler towards the base.

Length of the body 8 lines; of the wings 18 lines.

Brazil.

Genus Bolica, n. g.

Mas.—Corpus robustum. Palpi crassi, densè fasciculati, caput longe superantes, thorace vix breviores. Antennæ incurvæ, serratæ, ciliatæ, fasciculo penicillato ornatæ. Abdomen at-

tenuatum, fasciculo apicali radiato. Pedes robusti, pilosi; antici densissimè fasciculati. Alæ amplæ; anticæ subfalcatæ.

Male.—Body stout. Palpi thick, densely tufted along the whole length, rising high above the head, nearly as long as the thorax; 3rd joint much shorter than the 2nd. Antennæ curved, serrated, ciliated, with a fan-shaped tuft near the base. Abdomen tapering from the base to the tip, with a diverging apical tuft. Legs stout; femora and tibiæ tufted; fore-legs, excepting the tips of the tarsi, most densely tufted. Wings ample. Fore-wings subfalcate; costa straight; exterior border convex, oblique hindward.

Bolica armata.

Mas.—Ferruginea, alis nigro sub-conspersis, linea exteriore recta obliqua albida costam versus abruptè retracta, linea sub-marginali e punctis nigris, alis anticis litura reniformi plagaque apicali cervinis, linea exteriore arcuata punctisque marginalibus nigris, alis posticis subtus ex parte nigricante fuscis linea postice atra.

Male.—Ferruginous, paler beneath. Abdomen dark brown towards the tip. Wings minutely black-speckled, with a straight oblique, exterior, whitish line, dark-bordered on the inner side, and abruptly retracted towards the costa of the fore-wings; sub-marginal line indicated by black points. Fore-wings with the reniform mark, and an apical patch fawn-coloured; under side with a black, curved, exterior line and black marginal points. Hind-wings beneath blackish-brown exteriorly, with a blackish-brown exterior line, which is deep black and very distinct hindward.

Length of the body 8 lines; of the wings 18 lines.

Brazil.

Fam. PYRALIDÆ, Guén.

Genus Pyralis, Linn.

Pyralis intermedialis.

Cinereo-rufescens, palpis porrectis parvis articulo 3o minimo, pedibus sat robustis, alis angustis acutis lineis duabus albidis remotis nigro-marginatis, 1a dentata, 2a denticulata flexa apud costam dilatata, punctis marginalibus nigris, alis posticis cinereis nigricante bilineatis.

Cinereous-reddish, cinereous beneath. Palpi porrect, short, slender, extending very little beyond the head; 3rd joint very

minute. Legs rather stout; spurs long. Fore-wings narrow, acute at the tips; interior and exterior lines whitish, black-bordered, remote from each other; the 1st dentate; the 2nd denticulate, bent and dilated towards the costa; marginal points black; fringe cinereous. Hind-wings cinereous, with two blackish curved lines, and with black marginal points.

Length of the body 4? lines; of the wings 10 lines.

Haiti.

Pyralis externalis.

Mas.—Pallidè cinereo-cervina, palpis parvis ascendentibus articulo 3o minimo, antennis sub-pubescentibus, alis linea sub-marginali nigra denticulata pallido sub-marginata, linea interiore dentata interrupta minus determinata, alis anticis apice sub-rotundatis, litura discali nigra angulata, macula exteriore discali diffusa nigro-fusca, alis posticis sub-fuscescentibus.

Male.—Pale cinereous fawn-colour, whitish-cinereous beneath. Palpi short, slender, smooth, ascending, not rising so high as the vertex; 3rd joint conical, very minute. Antennæ very minutely pubescent. Abdomen extending very little beyond the hind-wings. Legs rather slender. Wings with a black, denticulated, irregularly pale-bordered sub-marginal line; interior line dentate, interrupted, less distinct than the exterior line; under side with the interior line almost obsolete, and the exterior one composed of black points. Fore-wings slightly rounded at the tips, with a black angular discal mark, beyond which there is a diffuse dark-brown discal spot. Hind-wings more brownish.

Length of the body 3 lines; of the wings 10 lines.

Brazil.

Pyralis? varipes.

Mas.—Fusca, crassa, subtus albida, capite thoraceque irides-cente cinerascentibus, palpis ascendentibus arcuatis albo-fasciatis, antennis sub-pubescentibus, abdominis lateribus sub-fasciculatis, pedibus crassis, alis anticis sat angustis glauco-conspersis nigro-trifasciatis, fasciis 2a, 3aque apud costam connexis.

Male.—Brown, thick, whitish beneath. Head and thorax with a whitish cinereous, slightly iridescent tinge. Palpi curved, ascending, not rising higher than the vertex; 1st joint white; 2nd and 3rd with white tips; 3rd much shorter than the 2nd. An-

tennæ very minutely pubescent. Abdomen with a row of small tufts along each side, conical and compressed at the tip, which extends rather beyond the hind-wings. Legs short, thick; spurs long; anterior legs mostly white. Fore-wings rather narrow, rounded at the tips, adorned with glaucous speckles, and traversed by three irregular black lines; 2nd and 3rd lines connected on the costa; sub-marginal lunules blackish; costa hardly convex; exterior border slightly oblique.

Length of the body 4 lines; of the wings 10 lines.

Amazon Region.

Pyralis proximalis.

Mas.—Cervina, sat robusta, palpis porrectis latis articulo 3o parvo, abdomine alas posticas superante, pedibus robustis, alis anticis sat angustis apice sub-rotundatis, spatio interiore nigricante-fusco, spatio medio pallidè cervino albido-marginato, puncto discali nigro, fimbria fusco-punctata, alis posticis albido-cinereis.

Male.—Fawn-colour, rather stout, cinereous beneath. Palpi porrect, extending somewhat beyond the head; 2nd joint broad, slightly curved; 3rd elongate-conical, about one-fourth of the length of the 2nd. Antennæ smooth, rather stout. Abdomen extending rather beyond the hind-wings. Legs stout, smooth. Fore-wings rather narrow, slightly rounded at the tips, blackish-brown towards the base, which is fawn-colour; middle part pale fawn-colour, bounded on each side by a whitish undulating line, and containing a black discal point; fringe pale, double, the interior part with brown points; costa slightly contracted in the middle; exterior part rather oblique. Hind-wings whitish cinereous.

Length of the body 3 lines; of the wings 10 lines.

Hindostan.

Pyralis nigricalis.

Fœm.—Nigra; abdomine alisque posticis pallidè cinereis, alis anticis albido-conspersis apice rotundatis, lineis tribus albidis interruptis undulatis, linea 3a biflexa, punctis marginalibus albidis, alis posticis apud marginem exteriorem sub-fuscescentibus.

Female.—Black. Head wanting. Abdomen, hind-wings and underside pale cinereous. Fore-wings whitish-speckled, much rounded at the tips; basal, interior and exterior lines whitish,

slight, interrupted, undulating; exterior line bent in front and hindward; marginal points whitish; exterior border convex, rather oblique. Hind-wings slightly brownish-tinged along the exterior border; underside with two brownish dentate lines, the outer one much broader than the inner one.

Length of the body 5 lines; of the wings 14 lines.

Tasmania.

Pyralis costigeralis.

Mas.—Nigricans, capitis fasciculo erecto penicillato, palpis ascendentibus longis angustis lanceolatis vix arcuatis, antennis sub-pubescentibus, pedibus robustis squamosis albido-fasciatis, alis anticis sat angustis apice rotundatis cinerascente conspersis, costæ triente basali sub-dilatata apice luteo-notata, alis posticis albidis extus sub-nigricantibus.

Male.—Blackish. Head with a high, erect, plumose tuft. Palpi erect, long, slender, lanceolate, hardly curved; 3rd joint short, very slender. Antennæ minutely pubescent. Abdomen hardly extending beyond the hind-wings. Legs stout, squamous; tibiæ and tarsi with whitish bands; spurs long. Fore-wings rather narrow, rounded at the tips, with whitish cinereous speckles; costa hardly convex, slightly dilated along the basal third of the length; a luteous mark at the end of this part; marginal points pale cinereous; exterior border hardly convex, moderately oblique. Hind-wings whitish, slightly blackish-tinged exteriorly.

Length of the body 4 lines; of the wings 10 lines.

Sydney.

Pyralis cervinalis.

Fœm.—Cervina, cinereo nigroque conspersa, palpis compressis angustis arcuatis lanceolatis ascendentibus, pedibus anterioribus fusco-fasciatis, alis anticis sat amplis apice rotundatis, lineis duabus nigricantibus indistinctis diffusis, 2a flexa, punctis marginalibus nigris, alis posticis albido-cinereis apud marginem exteriorem fuscescentibus.

Female.—Fawn-colour, speckled with cinereous and with black, mostly cinereous beneath. Palpi compressed, slender, curved, lanceolate, rising above the head; 3rd joint very acute, less than half the length of the 2nd. Antennæ smooth. Abdomen extending very little beyond the hind-wings; oviduct prominent. Anterior legs with brown bands. Wings somewhat ample. Fore-wings rounded at the tips, with the interior and exterior lines

blackish, indistinct, diffused; the latter bent, marginal points black; exterior border slightly convex and oblique. Hind-wings whitish-cinereous, brownish along the exterior border.

Length of the body 6 lines; of the wings 16 lines.

Tasmania.

Fam. ASOPIDÆ, Guén.

Genus Salbia, Guén.

Salbia varialis.

Mas.—Rufescente-ferruginea, subtus albida, palpis brevissimis, abdominis segmentis albo-marginatis, alis anticis fasciis tribus abbreviatis e maculis variis albo-hyalinis nigro-marginatis, alis posticis fuscis bifasciatis.

Male.—Reddish-ferruginous. Body beneath and legs whitish. Palpi very short, not rising so high as the vertex. Abdomen extending rather beyond the hind-wings; hind-borders of the segments white. Wings with abbreviated interior and middle bands, which are composed of irregular, black-bordered, white, hyaline spots. Fore-wings with an exterior band, which is much abbreviated hindward; exterior border very oblique. Hind-wings brown.

Length of the body $4\frac{1}{2}$ lines; of the wings 12 lines.

Amazon Region.

Genus Asopia, Guén.

Asopia depressalis.

Fœm.—Pallidè cervina, nitens, palpis porrectis lanceolatis sub-arcuatis, alis lineis interiore et exteriore fuscescentibus obliquis sub-arcuatis, punctis marginalibus nigricantibus, alis anticis puncto discali fusco, alis posticis linea exteriore valde arcuata.

Female.—Pale fawn-colour, shining. Palpi porrect, slender, lanceolate, slightly curved, shorter than the breadth of the head. Wings with the interior and exterior lines brownish, oblique, slightly curved, the latter much curved in the hind-wings; marginal points blackish. Fore-wings acute, with a brown discal point between the lines.

Length of the body 4 lines; of the wings 9 lines.

Cape.

Fam. HYDROCAMPIDÆ, Guén.

Genus Oligostigma, Guén.

Oligostigma amœnalis.

Mas.—Aurato-flava, subtus alba, oculis albo-marginatis, abdomine albo, alis anticis fasciis duabus undulatis maculaque discali albis purpureo-marginatis, alis posticis albis macula apud angulum interiorem aurato-flava.

Male.—Gilded-yellow, shining, white beneath. Eyes bordered with white. Palpi very short. Antennæ stout. Abdomen white, extending a little beyond the hind-wings; apical tuft long. Tibiæ with very long spurs. Fore-wings with two white, undulating, purple-bordered bands, and with a white intermediate, purple-bordered spot. Hind-wings white, with a gilded-yellow spot near the interior angle.

Length of the body $2\frac{1}{2}$ lines; of the wings 6 lines.

Brazil.

Oligostigma exhibitalis.

Fœm.—Lætè ochracea, corpore subtus, capite, thoracis lateribus anticis abdominisque fasciis albis, palpis lanceolatis ascendentibus, alis lituris argenteis nigro-marginatis, alis anticis fasciis tribus maculaque costali trigona, alis posticis bifasciatis basi costaque albis.

Female.—Bright orange, white beneath. Head and sides of the thorax in front white. Palpi lanceolate, ascending as high as the vertex. Abdomen extending far beyond the hind-wings; segments with white bands. Wings with silvery-white, black-bordered marks; sub-marginal band parallel to the exterior border, broad and abbreviated in the fore-wings; middle band less oblique in the fore-wings than in the hind-wings, and in a contrary direction. Fore-wings with a large triangular costal spot between the two bands, and with a basal band which is oblique in a contrary direction to the middle band. Hind-wings white at the base and along the costa.

Length of the body 4 lines; of the wings 8 lines.

Amazon Region.

Genus Cataclysta, Hubn.

Cataclysta insulalis.

Alba, thorace abdominisque fasciis fuscis, alis fascia interiore

lata obliqua, lineis duabus, fasciis duabus exterioribus maculaque trigona costali fuscis, alis anticis basi fuscis, alis posticis maculis sex marginalibus atris purpureo-marginatis.

White. Thorax brown. Abdomen with brown bands. Wings brown at the base, and with a broad, oblique, interior brown band, which is succeeded by an almost parallel brown line; beyond the latter there is another brown line, which is followed by two brown bands; the latter converge hindward, and in the fore-wings include between them a large triangular brown costal spot. Hind-wings with six deep black, metallic, purple-bordered spots along the exterior border.

Length of the body 3 lines; of the wings 8 lines.

Haiti.

Fam. MARGARODIDÆ, Guén.

Genus Glyphodes, Guén.

Glyphodes rutilalis.

Fœm.—Fusca, subtus albida, palpis ascendentibus articulo 3o minimo, thorace postico argenteo, abdomine albido-cinereo lituris transversis trigonis fuscis, alis anticis argenteo-subhyalinis iridescentibus ferrugineo-bifasciatis, fascia 1a interrupta, 2a albido-interlineata, maculis duabus trigonis costalibus punctisque marginalibus ferrugineis, alis posticis iridescente-fuscis micantibus.

Female.—Brown, whitish beneath. Palpi ascending, not rising so high as the vertex; 3rd joint very minute. Thorax silvery-white hindward. Abdomen whitish-cinereous, with a transverse triangular brown mark on each segment. Fore-wings brilliant silvery, with iridescent reflections, and with two ferruginous bands; 1st band interrupted, attenuated hindward, and with a large ferruginous triangular costal mark on each side; 2nd band narrower hindward, excavated on each side, and containing a whitish line near its interior side; marginal points ferruginous; fringe cinereous. Hind-wings cinereous, brilliantly iridescent.

Length of the body 6 lines; of the wings 16 lines.

Amazon Region.

Genus Margaronia, Hubn.

Margaronia auricostalis.

Mas.—Candida, capite thorace abdominisque fasciculo fuscis,

antennis pedibusque gracillimis, alis hyalinis albis perangustis, alis anticis vitta lata costali purpureo-fusca, costa sub-aurata.

Male.—Pure white. Head and thorax brown. Antennæ and legs very slender. Abdomen attenuated, extending rather far beyond the hind-wings; apical tuft brown. Wings hyaline-white, very narrow. Fore-wings with a purplish-brown, broad, costal stripe, which along the costa is dull gilded.

Length of the body 6 lines; of the wings 13 lines.

Para.

Fam. BOTYDÆ, Guén.

Genus Astura, Guén.

Astura insolitalis.

Mas.—Pallidè lutea, palpis brevissimis nigro-uniguttatis, thorace guttis sex nigris, alis anticis fascia basali plagis duabus costalibus maculis duabus apud marginem interiorem punctisque nonnullis nigro-fuscis, alis posticis fascia interiore macula apud angulum interiorem plagaque apicali nigro-fuscis.

Male.—Pale luteous. Palpi very short, not rising to the vertex, with a black dot on each side. Thorax with a black spot on each side in front, and with four black spots on the disk. Abdomen extending somewhat beyond the hind-wings. Tarsal joints with black tips. Wings with blackish-brown marks. Fore-wings acute, with three costal patches, with two spots on the interior border, and with a few points and little streaks; 1st patch basal, extending to the interior border. Hind-wings with an apical patch, with a spot by the interior angle, and with an interior band, which extends from the inner spot on the interior border of the fore-wings.

Length of the body 5 lines; of the wings 12 lines.

Sarawak, Borneo.

Genus Botys, Latr.

Botys additalis.

Fœm.—Fuscescente-cinerea, pectore antico candido, alis iridescentibus, lineis tribus fuscis undulatis indistinctis, 3a minus determinata.

Female.—Brownish-cinereous, whitish-cinereous beneath. Forepart of the pectus pure white. Abdomen extending a little beyond the hind-wings. Wings iridescent, with the interior, exterior and sub-marginal lines brown, undulating, not well determined;

sub-marginal line less distinct than the others. Hind-wings not paler than the fore wings.

Length of the body 4 lines; of the wings 10 lines.

Brazil.

Botys ineffectalis.

Fœm.—Alba, nitens, palpis fuscescentibus subtus niveis, pectore antico niveo, alis lineis tribus cervinis sub-undulatis subparallelis subtus fuscescentibus, punctis marginalibus fuscis, alis anticis lineis apud costam fuscescentibus.

Female.—White, shining. Palpi short, porrect, brownish above, snowy-white beneath, as is also the fore-part of the pectus. Wings with the basal, interior and exterior lines fawn-coloured, slightly undulating, nearly parallel, brownish on the costa of the fore-wings and on the underside; a slight fawn-coloured tinge along the exterior border; marginal points brown.

Length of the body 3 lines; of the wings 9 lines.

Amazon Region.

Botys rectiferalis.

Mas.—Cinereo-alba, palpis extus thoracisque lateribus anticis nigris, alis acutis, linea exteriore recta obliqua, linea marginali punctoque costali fuscis, alis anticis acutis striga obliqua subcostali fusca, costa basi nigra.

Male.—Cinereous-white. Palpi on the outer side, sides of the thorax in front, and costa of the fore-wings towards the base, black. Wings with a straight oblique exterior brown line; marginal line brown, slender; a brown point on the interior part of the costa. Fore-wings acute, with an oblique brown discal streak near the costa.

Length of the body 6 lines; of the wings 15 lines.

New Caledonia.

Genus Scopula, Schr.

Scopula desistalis.

Fœm.—Ferruginea, abdomine alisque posticis cinereis, alis anticis lineis tribus dentatis indistinctis punctisque marginalibus nigris, fimbria pallidè cinerea, alis posticis extus sub-fuscescentibus.

Female.—Ferruginous, cinereous beneath. Abdomen and hind-wings cinereous, the former hardly extending beyond the hind-

wings. Fore-wings with the interior, exterior and sub-marginal lines black, dentate, indistinct; marginal points black; fringe pale cinereous. Hind-wings with a brownish tinge exteriorly.

Length of the body 3 lines; of the wings 9 lines.

Brazil.

Fam. SCOPARIDÆ, Guén.

Genus Scoparia, Haw.

Scoparia fascialis.

Mas.—Albido-cinerea, palpis parvis latis, antennis pubescentibus, thoracis lateribus anticis fuscis, abdomine sub-carinato lateribus sub-fasciculatis, alis fusco-punctatis, alis anticis fasciis tribus fuscis diffusis, 1a basali, 3a marginali, alis posticis semi-hyalinis.

Male.—Whitish-cinereous, white beneath. Palpi short, broad. Antennæ pubescent. Thorax brown on each side in front. Abdomen extending beyond the hind-wings, slightly keeled, with small tufts along each side. Tibiæ and tarsi with black bands. Wings with large brown speckles. Fore-wings with three diffuse brown bands; 1st band nearly basal; 3rd on the exterior border; speckles more numerous along the costa than elsewhere. Hind-wings semi-hyaline.

Length of the body 4½ lines; of the wings 12 lines.

Canada.

Scoparia stupidalis.

Mas.—Cinerea, palpis angustis sub-ascendentibus anticulo 3o elongato lanceolato, antennis pubescentibus, alis anticis nigricante conspersis basi et apud marginem exteriorem nigricante sub-nebulosis, lineis duabus nigris denticulatis, alis posticis albido-cinereis.

Male.—Cinereous, paler beneath. Palpi slender, slightly ascending, extending somewhat beyond the head; 3rd joint lanceolate, shorter than the 2nd. Antennæ pubescent. Abdomen whitish-cinereous, extending somewhat beyond the hind-wings; apical tuft thick, close. Fore-wings minutely blackish-speckled; basal space and some parts of the surface about the exterior border diffusedly blackish; interior and exterior lines black, denticulated. Hind-wings whitish cinereous.

Length of the body 4 lines; of the wings 12 lines.

Brazil.

Genus Bonchis, n. g.

Fœm.—Corpus robustum. Proboscis brevis. Palpi porrecti, compressi, lanceolati, capitis latitudine paullò longiores. Antennæ glabræ. Abdomen carinatum, alas posticas sat superans. Pedes breviusculi, sat robusti, tibiis posterioribus densè fimbriatis. Alæ sat angustæ; anticæ apice rotundatæ; posticæ semi-hyalinæ.

Female.—Body stout. Proboscis short. Palpi compressed, lanceolate, porrect, a little longer than the breadth of the head; 2nd joint rather broad; 3rd a little shorter than the 2nd. Antennæ smooth. Abdomen keeled, extending rather far beyond the hind-wings. Legs rather short and stout; posterior tibiæ with long thick fringes. Wings rather narrow. Fore-wings rounded at the tips; costa straight; exterior border convex, rather oblique. Hind-wings semi-hyaline.

Bonchis scoparioides.

Fœm.— Cinereo-fusca, alis anticis spatio exteriore liturisque schistaceis, lineis duabus schistaceis 2a undulata nigricante sub-marginata, punctis marginalibus nigris, alis posticis fuscescente cinereis fimbria cinerea.

Female.—Cinereous-brown. Fore-wings wholly slaty-cinereous exteriorly, and with marks of the same hue elsewhere; interior and exterior lines slaty-cinereous; the latter undulating, irregularly blackish-bordered; marginal points black, minute. Hind-wings brownish-cinereous; fringe cinereous.

Length of the body 4 lines; of the wings 10 lines.

Para.

VIII. *Notes on the Species of* Triplax *of Stephens' "Illustrations" and Collection.* By G. R. Waterhouse, Esq., F.Z.S., &c.

[Read 3rd Dec. 1860.]

In my own collection, and the collections of my friends, so far as I recollect, there are but two British species of *Triplax*, viz. *T. russica*, and *T. ænea;* but in Mr. Stephens', there are five species, and as with regard to some of these there is much confusion, I have thought the following notes would be acceptable.

Sp. 1. *Triplax russica* of Stephens' Illustrations, vol. iii. p. 88, sp. 1, and Collection.

The insect universally known by the same name.

Sp. 2. *Tr. castanea*, Steph. l. c., p. 89, 2.

Represented by three specimens in Mr. Stephens' Collection. One a very immature specimen of the *Triplax russica:* the other two are of the same species, but present scarcely any divergence from the normal condition of the insect. These are referred to the *Silpha castanea* of Marsh. Ent. Brit. p. 122, but Marsham described the insect from Shaw's Collection, and we have no reason to believe that either of the specimens above noticed was the original of the description: this latter gives the size of the insect as two lines, whilst *T. russica* is said, in the same work, to be 3 lines in length. I think it therefore very doubtful if the present insect be the Marshamian *S. castanea.*

Sp. 3. *Tr. ænea*, Steph. l. c., p. 89, and Collection — = *Tr. ænea*, Gyll., &c. &c. &c.

Sp. 4. *Tr. bicolor*, Steph. l. c., p. 89, pl. xvii. f. 4.

This is given as the *Silpha bicolor* of Marsham, Ent. Brit. 122, 18. A certain species inhabiting Sweden was referred by Gyllenhal (see Ins. Suec. i. p. 205, 2) to the *S. bicolor* of Marsham in 1808, since which time it has been well known on the continent by that name. The description given by Stephens is evidently taken from Gyllenhal, and hence belongs to the same insect, and yet to the best of my know-

ledge the Gyllenhalian species has not hitherto been found in England. *T. bicolor* is represented in Stephens' Collection by three specimens, two of which are old, dirty and greasy, and pinned with largish pins; the third is a fresh specimen, pierced by a delicate thin pin. With regard to the species Stephens says,—"Rare: I possess a pair from the Marshamian Collection, and I once beat a single example from a birch-tree in Coombe-wood in June." From this note I have strong grounds for believing that the two old specimens are the Marshamian types, and, in fact, represent the *Silpha bicolor* of his work. The elytra in these two insects, being stained with grease, *appeared* to be black, but upon applying a little spirits of wine with a camels' hair pencil to one of the elytra of each specimen, I found that the elytra were of a green-blue colour, and that in this, and all other respects, they agree perfectly with the *Triplax ænea* of authors.

The third specimen, which is pinned as Mr. Stephens usually pinned the insects captured by himself, is a distinct species, and being in good condition was no doubt the insect given to Mr. Charles Curtis to draw, for the plate in the "Illustrations." This most careful artist would never have made a drawing from either of the other two specimens without first cleaning it; and, moreover, the figure clearly represents the specimen in question, in having a black scutellum, &c. &c. This insect is about equal in size to the *Tr. ænea*, but differs in having black elytra with the interstices of the striæ distinctly punctured, and in having the scutellum, as well as the chest and abdomen, black; and, in short, agrees well with Lacordaire's description of *Triplax ruficollis*—see the *Monogr. des Erotyliens*, p. 211, sp. 10.

So that *Silpha bicolor*, Marsh. = *Triplax ænea*, auct.
Triplax bicolor, Steph. descrip. = *Triplax bicolor*, Gyll.—not British!
——— ——— Steph. Illustr. pl. 17, f. 4 = *Triplax ruficollis*, Lacord.

Sp. 5. *Triplax rufipes*, Steph. Illustr. iii. p. 90, pl. 17, f. 5 = *Triplax rufipes*, Gyll., Lacord.

Represented by two specimens in Mr. Stephens' Collection—"found near Windsor." The insect is much smaller than *T. russica*, and readily known by its comparatively short form, and the abdomen being black, excepting at the apex. Larger and broader than *T. ruficollis*, Lacor.

Sp. 6. *Triplax ruficollis*, Steph. Illustr. iii. p. 90, pl. 17, f. 6.

With regard to this insect (which is well figured) Stephens says, "the black head at once distinguishes this species from its congeners." I may add, that the antennæ are, moreover, relatively stouter. By some singular accident Lacordaire refers this insect to his *Triplax ruficollis*, an insect *with a red head*. Stephens' insect, however, seems to be clearly the *Triplax nigriceps* of that author's Monograph, p. 213. It is represented in Stephens' Collection by a single specimen, supposed to have been taken near Windsor.

Should any of our entomologists possess British specimens of either of the two last-mentioned species, and have it in their power to give us accurate information respecting their capture, it is highly desirable that it should be made known: as no positive authority is given for the capture of those in Mr. Stephens' Collection, it is of course somewhat doubtful whether the species be really British. Very many of the insects introduced into the works on British Entomology stand in the same category. Some, from their known habitats on the continent, are so unlikely to be indigenous that I have not hesitated to reject them from my catalogue.

IX. *Descriptions of* Scymnus discoideus (*Family* Coccinellidæ) *and two allied Species, and Description of a new Species of* Bryaxis (*Fam.* Pselaphidæ). By G. R. Waterhouse, Esq., F.Z.S., &c.

[Read March 4th, 1861.]

Scymnus discoideus, Illiger, Gyll., Mulsant, &c.; *Byrrhus Pini* of Marsham.

Sc. ovatus, niger, pilosus; elytris crebre subtiliter punctatis, fulvo-rufis, sutura nigricante; corpore subtus fortius minus crebre punctato, pectore canaliculato; antennis, palpis, pedibusque plus minusve nigricantibus; thoracis angulis anterioribus plerumque rufescentibus.

Sc. discoideus is by nearly all authors said to be a pine-tree insect. I have just examined sixty specimens from various localities, all taken from pine-trees—of thirty-six specimens in my own collection, many are from the neighbourhood of Erith, and two dozen specimens which I examined from Dr. Power's collection are from Weybridge. The insect is said to be very variable in colour, &c., and both Gyllenhal and Mulsant have devoted considerable space in their works to the description of these varieties. Among the specimens above alluded to, however, and many others which I have beaten out of pine-trees, I have not met with such varieties; whilst, on the other hand, I have met with *Scymni* from other situations, which correspond very closely with the varieties above alluded to. The pine-tree insect, according to my experience, is black, with brick-red elytra; the suture of the elytra is more or less indistinctly, and *narrowly* edged with dusky, and not unfrequently the base of the elytra and the outer margin are narrowly edged with dusky or brownish, but in no case well defined, and, on the outer margin, the darker colour is confined to the fore-part of the elytron. The thorax is sometimes entirely black, but generally there is a trace of dull red at the sides, and more especially at the anterior angle. The abdomen also is usually tinted with rufous at the apex. The legs are sometimes black, with pitchy tarsi, but usually the coxæ, tibiæ and tarsi are more or less rufescent. The chest is always distinctly canalicu-

late, and the small, nearly semicircular plate situated immediately beneath the base of the posterior thigh, which Mulsant calls the "plaque abdominale," extends, in the fore-and-aft direction, over rather more than two-thirds of the diameter of the abdominal segment. The punctuation of the elytra is dense and rather fine, and composed of punctures of different sizes, and the interstices are somewhat rugulose.

Scymnus atriceps of Stephens is founded upon an immature specimen of this species.

Scymnus Mulsanti, n. sp.

Sc. ovatus, postice sub-acuminatus, niger, pilosus; elytris crebre punctatis, obscure rufis, late nigro-marginatis; corpore subtus crebre subtilius punctato; antennis, palpis, pedibusque testaceis.

Of this insect I possess nine specimens, collected from the roots of herbage, just above high water mark, about a mile beyond Southend; and I have a single specimen which I took at Holm-bush, in Sussex. In Dr. Power's collection are eleven specimens from the latter locality, two from Deal, and two from a marshy pit near Lee, in Kent. Its favourite resorts, then, would appear to be marshy places, either near the sea or inland; and it is found in localities far remote from fir-trees. The average size of the insect is rather less than that of the *Sc. discoideus;* it is rather more convex, and differs in having the elytra somewhat acuminate in the posterior half; in having the chest and abdomen very thickly (especially towards and at the sides) and more finely punctured; in having the abdominal plates more extended in the fore-and-aft direction, and consequently leaving a narrower space behind between the plate and the edge of the segment; in having the pectoral groove excessively indistinct or entirely wanting; and in having the antennæ, palpi and legs entirely testaceous, and the thighs shorter and more inflated. The red colour of the elytra, moreover, is usually darker, and the elytra are broadly margined with black throughout. Taking a common condition of the colouring, the black and the red are nearly in equal proportions: the black occupies a broad space at the base of the elytra, extends down the suture for a short distance in the form of an equally broad band; here (that is, about midway between the base and the apex of the elytra) it is very often rather suddenly expanded in width, and there is a corre-

sponding expansion of the black at the side of the elytron; but behind the centre the sutural band is considerably contracted before it reaches the apex, where again it dilates to join the black of the margin. Sometimes the sutural band is suddenly contracted a little behind the middle of the elytra, and completely disappears; and occasionally the dark colour is so diffused, that the red almost disappears. Among the various described varieties of *Sc. discoideus*, I do not see any which completely correspond with the present species in the colouring. I see none in which the black on the suture, for instance, is somewhat suddenly dilated in the middle, as is frequently the case in the *Sc. Mulsanti*.

Specimens of this insect stand in Stephens' collection to represent the "*Scymnus limbatus*, Kirby's MSS.," but the original description must be taken from some other insect, since in the "Illustrations" the legs are said to be "pitchy-black."

Scymnus limbatus, Kirby, MSS. and Collection; Steph. Illustr. iv. p. 395.

Sc. breviter ovatus, niger, pilosus; elytris fortius regulariter punctatis, obscure ferrugineis, sutura apiceque late, marginibus lateralibus anguste, nigro-marginatis; corpore subtus minus crebre punctato, pectore canaliculato; antennis, palpis, pedibusque nigricantibus.

Decidedly smaller, and of a more convex and shorter form than *Sc. discoideus*, from which it is further distinguished by the more distinct puncturing of the elytra—here the punctures are more widely separated and of equal size, and the intervening spaces are perfectly even (not rugulose); the elytra are less ample; the pubescence shorter; the abdominal plate is rather more extended towards the apex of the first abdominal segment, but its transverse diameter is less, and its curve is more sudden, showing a slight tendency to assume an angular form behind. From *Sc. Mulsanti* it may be distinguished by its shorter and obtusely rounded elytra, the more distinct and less dense punctuation of the elytra and under parts of the body, the decidedly smaller size of the abdominal plates, the distinct pectoral groove, and the black legs with the femora less inflated. The very broad black band which runs along the suture is usually pretty equal in width, and the apex of the elytra is pretty broadly margined, but the sides are very narrowly edged with black.

I possess four specimens of this insect; the locality of only one of them I have noted, and that was from the Hammersmith

marshes: in Dr. Power's collection I find six specimens, three of which are from the same locality, and the other three are from Hornsey Fen. In neither place are there any fir-trees.

Bryaxis simplex, n. sp.

Rufo-picea; elytris sanguineis, marginibus infuscatis; antennis pedibusque fusco-testaceis; capite tri-foveolato; thorace foveolis tribus sub-æqualibus.

This insect belongs to the same section as the *B. fossulata:* the foveæ on the thorax are nearly equal, and not united by a transverse groove; the abdomen presents no sexual distinctions, and the anterior coxæ are unarmed in the male—they are not even slightly produced, and angular as in *B. fossulata;* and the male is only distinguished by the presence of a very small spine at the apex of the intermediate tibiæ. In size it is equal to the *B. sanguinea*, and its antennæ are as long as in the female of that insect, and can scarcely be said to differ in structure. The general colour is piceous, not darker than in *B. fossulata*, but of a more rufous tint; the antennæ and legs are fusco-testaceous; the tibiæ and tarsi rather paler than the thighs; the elytra are red, but less intense and less brilliant than in *B. sanguinea;* and at the margins, throughout, they are more or less piceous. The head has a small foveola on the vertex, besides the three ordinary foveæ; of these, the two frontal foveæ are rather more approximated than in *B. fossulata*, and the hinder part of the head is more produced. The terminal joints of the palpi are fuscous or piceous; the basal joints paler. The thorax agrees very nearly in form with that of *B. fossulata*, but the posterior angles are less obtuse; the lateral foveæ are rather larger and less forward in position, and there is a shallow depression on each side, connected with these foveæ, which runs along the posterior margin of the thorax and extends almost to the central fovea; the space between this latter and the lateral fovea is much raised, and almost assumes the form of a large, bluntly-rounded tubercle; the surface of the thorax is very finely and sparingly punctured. The elytra are relatively longer than in *B. fossulata*, and, like the abdomen, more finely and more sparingly punctured, and the pubescence is more scant. The striolæ at the base of the first abdominal segment, above, are more widely separated, the space between them slightly exceeding one-third of the entire width of the convex part of the abdomen; whilst in *B. fossulata* the corresponding space is rather less than

one-third ; there is no evident difference in the sexes in this respect, as is seen in some other species.

The above description is founded upon six male specimens and two females, which I found under rejectamenta, by the River Medway, near Rochester, in February, 1857 ; the insect, then, may possibly be confined to situations within the influence of salt or brackish water.

X. *On the* Euphorbia-*infesting* Coleoptera *of the Canary Islands.* By T. Vernon Wollaston, Esq., M.A., F.L.S.

[Read 6th May, 1861.]

There are few facts in Entomology more extensively true, than that the most peculiar insects of a region are usually to be found either dependent on or inhabiting the same area as its most peculiar plants. Accepting this as an axiom, I have never failed to derive much practical aid, in every country which I have yet explored, from ascertaining in the first instance not merely the general character of the vegetation, but also the particular plants in which it is naturally most prolific, and the tracts where they occur; for experience has invariably shown me that it is from such tracts that the entomologist will, in the long run, obtain his greatest treasures. I do not say that these regions must always be the most productive as regards the number of species ; far from it,—for they may often occupy high elevations, difficult of access, which the host of colonists gradually naturalized below has failed to reach ; but I think it is not too much to affirm, that the insect population of such localities is *par excellence* the truly indigenous one, and that consequently the tenants of these spots have a greater claim to be the *αὐτόχθονες* of the soil (and probably, therefore, to a great extent, endemic) than those of any other.

That the fact is universal, even despite the undoubted repulsiveness of certain plants to the generality of the insect tribes, there is good reason to suspect. Few trees, for instance, in their chemical properties, could be more unattractive, one would ima-

gine, than the various Laurels; nevertheless in Madeira, which was originally "laurel-clad," I felt convinced, from the very first day I landed there, that those portions of the island in which the native wood still remained would be essentially the abodes of the most peculiar, or esoteric, insect-forms. And how literally this is the case no one who has laboured practically in the loftier altitudes, and the almost inexhaustible "inner mountain mazes" of that wonderful land, will for an instant dispute. Yet the first impression of the northern collector in the laurel-groves of the Atlantic is that of the paucity of life; and it is only after he has become acquainted with his ground, and the sedentary nature of a large section of its inhabitants, that he can realize the actual number of the living creatures which surround him. In the Canarian group the laurel-forests, once so superb, have now nearly disappeared, and along with them the characteristic fauna which they, directly or indirectly, must have nourished; yet in the few regions which have escaped the ruthless axe of their improvident occupants, the primeval forms are still dominant,—driven there, as their last resting-places, before their final extinction from off the earth.

But in the vegetation of the Canarian archipelago there is, apart from the laurels, a great and important feature, which is but slightly indicated at the Madeiras,—namely, the excessive abundance of various gigantic Euphorbias. Whole plains and mountain-sides are absolutely clothed with them; and in some of the less frequented parts of the more remote islands one may often ride for miles through a perfect wilderness of these monstrous plants,—some of the larger of which might be almost compared, in their shape and dimensions, to dwarf, stunted oaks. My first trip to the Canaries was with John Gray, Esq., in his yacht the "Miranda," early in January, 1858; and our impression on viewing this *Euphorbia*-teeming land was, that a rich field, of a very anomalous kind, must of necessity be in store for us. Nevertheless when we began to penetrate into the thickets of these viscous shrubs, the foliage was almost free from life, and there seemed but little hope of success. Feeling convinced, however, that such a remarkable vegetation could not possibly exist without its own special fauna, we persevered in examining it; and whilst in the north of Lanzarote were fortunate enough to alight on some rotten stems, which had not been gathered for burning, standing erect in the soil. A few minutes at these brought to light what we had long been anticipating,—namely, a host of minute *Coleoptera*, evidently peculiar to this "habitat." From that moment we never failed to inspect

the dead *Euphorbia*-stems, whenever they chanced to occur; and during my subsequent visits to the islands it has always been one of my chief objects to investigate them.

What I propose in the present Memoir, is to describe all† the species of the *Coleoptera* which have hitherto been ascertained to occur amongst the various Canarian Euphorbias. Although the greater portion of them would seem to be attached exclusively to those plants, a few (as might indeed be expected) occur in others likewise; but since my object is to place before the collector the exact insects which he would probably meet with whilst searching the Euphorbias, I am compelled to admit this small assortment which are not *entirely* of *Euphorbia*-infesting habits. Such species, however, are not numerous; for out of the forty-eight enumerated below, thirty-six‡ are apparently quite peculiar to the Euphorbias,—the remaining twelve only displaying more promiscuous modes of life.

But however remarkable may be the perfect *exclusiveness* of an immense majority of these *Coleoptera* to the rotten *Euphorbia*-stems, it is not *more* so than the prodigious numbers in which many of them occur. The *Europs impressicollis*, *Phlœophagus caulium* and *Mesites fusiformis* occasionally swarm within the branches and trunks; and the *Aphanartha* abound to such an incredible extent that I have often seen decayed stalks almost, as it were, alive with them. In fact, at the present moment, I cannot recall having *ever* found a *single* dead *Euphorbia*, even though it chanced to be the only one remaining in a district, and miles removed, so far as I could judge, from any other shrub of the same genus, which was not tenanted by one or more species of *Aphanarthum*; and yet one may search the archipelago from end to end, at all elevations and in every conceivable position, without detecting so much as a solitary individual attached to any other plant!

Here then surely, if ever, we have a good opportunity for testing, by actual observation and on an extensive scale, the effects (did such exist) so ingeniously pleaded for by a certain modern

† One only has been omitted,—a most extraordinary and anomalous little insect with curiously dilated *genæ* in the male sex, strictly Rhyncophorous trophi (with the exception of a fully developed upper lip), and (as I believe) pseudotetramerous feet; but as Prof. Westwood is working at present at Platycephalous *Coleoptera*, I have handed over to him this remarkable creature (to which I had applied the provisional name of *Thaumastocephalus lobatus*) for insertion into his Paper.

‡ I have indicated these thirty-six, in the following diagnoses, by affixing an asterisk to them.

theory, which we have been told it is most "unphilosophical" to doubt. Here are seven large islands, the lower and intermediate regions of which were originally more or less densely clothed with various gigantic Euphorbias, nourishing an entire fauna of their own. By degrees the Euphorbias are becoming destroyed (collected by the inhabitants for fuel), and in immense tracts they have already totally disappeared. Now, what is the consequence? Are the creatures which infest them to adapt themselves gradually to altered circumstances and a different kind of food, becoming (to however slight an extent) modified accordingly? or shall they, on the other hand, die-out? Our theorists must, in consistency with their own principles, say the former; but if we go to nature for a reply, she pronounces, unequivocally, the latter! Nor can this be regarded as a mere isolated fact, to be at all accounted for by circumstances of an exceptional kind, and one therefore from which we cannot properly generalize; for it applies to upwards of thirty well-defined species, swarming by myriads over extensive tracts of country widely separated from each other and variously constituted;—so that there is nothing "exceptional" about it; it is merely the common result of a gradual change of external influences brought to bear on a *whole fauna* which was specially created for a peculiar race of plants, and such as might have been anticipated beforehand by the most ordinary practical observer. It is precisely analogous to the case of the *laurel*-fauna, which (through a similar cause) is in like manner fast disappearing from the Atlantic groups, and which in some of the islands has absolutely gone,—leaving no vestige behind it of any one species which can possibly be supposed (from the knowledge, gathered elsewhere, which we actually possess of them) to have been in any way connected with, or derived from, the original forms.

I will just add, that eight only of the *Coleoptera* enumerated below have been detected also at Madeira, namely, *Europs impressicollis**, *Læmophlœus clavicollis*, *Corticaria maculosa*, *Aphanarthrum bicolor** and *piscatorium**, *Leiparthrum curtum* and *inarmatum** and *Homalota coriaria*,—merely half of them, moreover (to which an asterisk is affixed), being of *exclusively Euphorbia*-infesting habits. But since the Euphorbias are very much less numerous in that group (both specifically and individually) than they are at the Canaries, this is simply in accordance with what we might anticipate. Still, it must be noted that there are a *few* species†

† Such are the *Aphanarthrum* and *Mesites Euphorbiæ*, *Caulotrupis subnitidus*, *Hypophlœus ambiguus* and *Omalium clavicorne*.

attached to the Euphorbias in Madeira which have not been observed hitherto at the Canaries; added to which, the plants there (which grow often in places difficult of access) have not yet been so thoroughly examined as in the neighbouring archipelago; and it is, consequently, possible that, when such shall have been done, a greater proportion of the Canarian species will be found to exist. One or two, however, would seem strictly to *represent* each other in the respective groups: thus, the Canarian *Mesites fusiformis* is the exact counterpart of the Madeiran *M. Euphorbiæ*, and the Canarian *Hypophlœus Euphorbiæ* of the Madeiran *H. ambiguus*. The *Phlœphagus caulium* might perhaps, also, be regarded as the analogue of the Madeiran *Caulotrupis subnitidus;* and the Canarian *Aphanarthrum affine* as that of the *A. Euphorbiæ*. But the several species which are apparently peculiar to that singular and *Cactus*-like plant the *E. canariensis* are of course entirely absent from the Madeiras.

Fam. TROGOSITIDÆ.

Genus Leipaspis, nov. gen. (Pl. VII. fig. 1.)

Corpus sat magnum, lineare, angustum, subcylindricum, sculpturatum: *capite* magno, convexo, elongato, apice trisinuato, fronte leviter canaliculatâ; *oculis* a margine prothoracis antico valde remotis, prominulis, oblongis, antice integris rotundatis, postice truncatis: prothorace elongato, basin versus gradatim leviter attenuato, apice haud excavato, angulis anticis obtusis: *mesothorace* elongato, superne valde conspicuo, *scutello* nullo: *elytris* elongatis, parallelis, limbo (præsertim ad humeros) plus minus incrassato. *Antennæ* breves (capitis vix longitudine), articulo 1mo inflato subgloboso, sequentibus ad clavam parvis gradatim paulo majoribus (2do brevissimo), reliquis clavam magnam sat abruptam laxam triarticulatam efficientibus (9no et 10mo æqualibus intus productis, 11mo subsecuriformi-globoso). *Labrum* (fig. 1a) corneum, transverso-quadratum, angulis anticis rotundatis ciliatis, apice leviter emarginatum. *Mandibulæ* robustissimæ, corneæ, triangulares, apice acutæ bidentatæ et infra apicem dentibus duobus parvis obtusis obscuris auctæ. *Maxillæ* (fig. 1b) lobo singulo maximo lato recto intus et apice densissime longissimeque pubescenti instructæ; *lobo interno* brevissimo, minutissimo, subobsoleto. *Palpi* elongati; *maxillares* articulo 1mo parvo flexuoso, 2do majore elongato subclavato, 3tio hoc breviore, ultimo lon-

gissimo subcylindrico-fusiformi: *labiales* (fig. 1c) articulo 1mo sat magno subflexuoso, 2do majore crassiore subobtriangulari, ultimo longissimo crassiore subfusiformi. *Mentum* breve, transversum, lateribus paulo rotundatis, antice profunde bisinuatum et dente medio obtuso auctum, angulis lateralibus paulo longioribus acutis. *Ligula* robusta, cornea, e duplici parte (basali et apicali) formata; parte anticâ profunde bipartitâ, lobis divergentibus, intus longe ciliatis. *Pedes* longiusculi: *tibiis* extus simplicibus, paulo incurvis: *tarsis* ut in *Trogositâ,* articulo 1mo brevissimo fere recondito.

Obs. Genus *Temnochilæ* affinitate proximum et cum illo speciebus sat magnis submetallicis necnon antennarum instrumentorumque cibarium structurâ fere congruens; sed corpore angustiore subcylindrico, antennis brevioribus, capite prothoraceque longioribus, oculis antice rotundatis integris, e lentibus majoribus compositis necnon a margine prothoracis antico longissime remotis scutelloque nullo a *Temnochilâ* discedit.

A λείπω, relinquo, et ἀσπὶς, scutellum.

The three important insects for which the present genus is proposed would appear to combine many of the features which characterize the several acknowledged genera of the true *Trogositidæ;* but they are at once distinguished (I believe) from the members of them all, by their very elongate head and prothorax (the former of which has the eyes rounded and entire in front, and placed at an immense distance from the anterior edge of the latter), by their narrow, parallel, subcylindric bodies, and by their perfect freedom from scutella. In their large size and submetallic surfaces, as well as in the structure of their oral organs and antennæ, they have more perhaps in common with *Temnochila* than with any other group; nevertheless in *Temnochila* the antennæ are less abbreviated, the head and prothorax are comparatively shorter, the eyes are deeply emarginate in front, and composed of much finer and more depressed lenses, the scutellum is distinct, and the whole body is less narrow and cylindrical. From *Alindria*, of Erichson (judging from the published diagnosis), *Leipaspis* is at once removed, apart from all other differences, by its very much longer head and prothorax, and by its *simple* tibiæ; whilst from *Melambia*, its anteriorly bisinuated mentum, comparatively convex, submetallic, escutellate body, and its greatly elongated head and prothorax will, even of them-

selves, suffice equally to separate it. It may, therefore, be regarded as a small generic group in all probability peculiar to the Canarian archipelago.

1. *Leipaspis caulicola*,* n. sp. (Pl. VII. fig. 1.)

L. subviridi-ferruginea, nitida, subalutacea; capite prothoraceque dense et profunde punctatis, hoc anguste marginato angulis anticis obtusis; elytris parallelis, distincte marginatis, crenato-striatis et valde transversim rugulosis; antennis, palpis pedibusque rufo-testaceis.

Long. corp. lin. $2\frac{1}{2}$.

Habitat Teneriffam, in *Euph. canariensi* putridâ in montibus supra Sanctam Crucem detecta.

Of the present *Leipaspis* I have seen hitherto but a single exponent; and as I am not certain whether it is perfectly mature, I am doubtful whether the colour of the species may not in reality be somewhat darker than is the case in the specimen now before me: whilst its small dimensions, as compared with those of two nearly related Canarian forms, may possibly be, to a certain extent, merely accidental. Be this, however, as it may, the *L. caulicola* cannot be safely referred, I think, to either of its allies, though it must be admitted that the whole three are intimately connected. The fact, moreover, of my having found it within the putrid stem of a *Euph. canariensis* (on the mountains above Santa Cruz of Teneriffe) would go far to render it *à priori* probable that the species is truly distinct from the other two,†—

† I subjoin the following diagnoses of these two species, which will serve to point out their distinctions from the *L. caulicola*.

Leipaspis lauricola, n. sp.

L. viridi-picea, subnitida, distincte alutacea; capite prothoraceque sat dense punctatis, hoc crasse marginato angulis anticis obtusis; elytris parallelis, distincte marginatis, crenato-striatis et plus minus obscure transversim rugulosis; antennis, palpis pedibusque læte rufo-ferrugineis.

Long. corp. lin. 3—6.

Habitat sub cortice laurorum laxo in locis editioribus sylvaticis Teneriffæ et Palmæ, rarior.

Apparently quite peculiar to the laurels of intermediate and rather lofty elevations,—beneath the loose outer bark of which I have taken it in the woods above Taganana, and towards Point Anaga, of Teneriffe, as also in the Barranco de Galga and the Barranco da Agua on the east of Palma. It is extremely variable in size; nevertheless it may always be known from its near ally the *L. pinicola* by having its elytra more decidedly parallel and less deeply crenate-striated, by its surface being rather greener and more evidently alutaceous and subopake, by its

one of which is peculiar to the pine-trees and the other to the laurels. If therefore the individual from which my diagnosis has been compiled may be regarded as normal, the *L. caulicola* may be known at once from its allies by its smaller size, paler hue, and its more transversely-rugulose elytra; whilst its totally different habits will still further characterize it. In the sculpture of its very *parallel* elytra, however, it has more in common with the *L. lauricola* than with the other; nevertheless its densely punctured head and prothorax and but slightly alutaceous surface are more suggestive of the *L. pinicola:* but in the thickness of its prothoracic margin it is about intermediate between the two.

Genus Trogosita.

Olivier, Ent. ii. 19 (1790).

2. *Trogosita latens*,* n. sp.

T. subdepressa, nigra, subopaca; capite prothoraceque remote punctatis (punctis in disco minutis), hoc transverso-subquadrato antice latiusculo, angulis anticis vix productis, ad latera subrotundato; elytris subparallelis, profunde punctato-

head and prothorax being rather less closely and not quite so coarsely punctured, and by the marginal rim of the latter (as well as that of the elytra) being much thicker or defined. Its anterior prothoracic angles, too, are a trifle less obtuse, and with the margin at that particular point *very much* more developed or incrassated.

Leipaspis pinicola, n. sp.

L. subviridi- vel etiam subcyaneo-picea, nitida, minus alutacea; capite prothoraceque dense et profunde punctatis, hoc angustissime marginato angulis anticis valde obtusis; elytris subparallelis (versus humeros subangustioribus), angustissime marginatis, profunde crenato-striatis et distincte transversim rugulosis; antennis, palpis pedibusque læte rufo-ferrugineis.

Long. corp. lin. 3½—4.

Habitat in pinetis Teneriffæ et Palmæ, sub cortice laxo *Pini canariensis* rarissima.

Known from the last species (as has been already implied) by its elytra being rather more contracted, or drawn-in, at their base (and therefore a trifle more widened behind the middle), as well as a little more transversely-rugulose and more deeply crenate-striated. The lateral rim, too, both of its prothorax and elytra is very much less developed, its surface is somewhat more shining, less coarsely alutaceous, and of a more piceous tinge, and the punctuation of its head and pronotum is perceptibly deeper and more dense. Its anterior prothoracic angles are rather more obtuse and *very* much less margined. So far as I have observed hitherto, it is found exclusively beneath the loose bark of the *Pinus canariensis*,— in which positions I have captured it at the Agua Mansa, and above Ycod de los Vinhos, of Teneriffe, as also in the old Pinal adjoining the Caldeira in the Banda of Palma.

striatis; antennis pedibusque piceis, illis brevibus, articulis ultimis tribus majoribus, intus ferrugineis serratis, clavam abruptam efficientibus.

Long. corp. lin. 3—4¾.

Habitat in Lanzarotâ, Teneriffâ et Hierro, intra caules Euphorbiarum madidos latens.

The present distinct *Trogosita* appears, so far as I have hitherto observed, to be peculiar to the decayed *Euphorbia*-stems of the Canaries,—where it was first captured by Mr. Gray and myself, during January, 1858, on the Risco, above the Salinas, in the north of Lanzarote. I subsequently took it, in similar positions, at El Golfo, on the west of Hierro; and at Taganana, in the north of Teneriffe. It would seem to be very rare, occurring in the moistest and most rotten parts of the Euphorbias,—beneath the loose outer fibre towards the *lower* portions of the stems (and even of the roots), which come in direct contact with (and are often buried in) the damp earth. It varies considerably in size; and is rather more black, parallel and opaque than the common *T. mauritanica*, its prothorax is more quadrate and remotely punctured, and with its extreme angles less produced, its elytra are very much more deeply punctate-striated, and its antennæ are shorter, and with their three apical joints internally enlarged (or serrated) into an abrupt club, after the fashion of the Madeiran *T. serrata*,—to which indeed, although conspicuously distinct from it, it is much more nearly allied.

3. *Trogosita recta*,* n. sp.

T. elongata, subdepressa, piceo-fusca, subopaca; capite prothoraceque profunde sed haud dense oblongo-punctatis, hoc ad latera oblique recto, angulis anticis porrectis, angulis ipsis-simis posticis exstantibus; elytris fusiformi-parallelis, profunde crenato-striatis.

Long. corp. lin. 3.

Habitat Lanzarotam borealem, in trunco quodam Euphorbiæ semel capta.

Though certainly distinct from it, the present *Trogosita* is very closely related to the Madeiran *T. serrata*. It is, however, a little darker and less parallel than that insect (its prothorax being a little wider in front, and the elytra a little more evidently dilated behind the middle); its prothorax is not *quite* so densely punctured, more coarsely margined, and straighter (though oblique) at the sides—with its anterior angles more porrected, and its

extreme basal ones more prominent; its whole body is a trifle less cylindric; and its tibiæ are less evidently pubescent along their inner edge. In its habits, too, it would appear to recede from that species—the unique example which has come under my notice having been taken from out of a dead *Euphorbia*-stem at Yé, in the north of Lanzarote, during our encampment there in March, 1859; whereas the *T. serrata* has hitherto been detected only about the houses of Funchal and amongst various articles of commerce—leading to the supposition that it has probably been accidentally introduced into the island.

In its mode of life, indeed, the *T. recta* seems to be coincident with the *latens;* nevertheless it may be immediately known from that insect by its much smaller size, less parallel outline, and reddish-brown hue (the *latens* being black), by its less depressed upper-surface, by the straighter sides and more porrected anterior angles of its prothorax, by its less deeply striated elytra, and by its rather shorter and less clavated antennæ—the ultimate joint particularly being considerably less developed.

Fam. COLYDIADÆ.

Genus Europs.

Woll., Ins. Mad. 149, pl. iii. f. 2 (1854).

4. *Europs impressicollis,** Woll.

E. angustus, subcylindrico-linearis, nitidus et parce pubescens; capite prothoraceque rufo-ferrugineis, profunde et remote punctatis, hoc elongato-quadrato, in disco profunde longitudinaliter impresso; elytris posterius paulo angustioribus, punctato-striatis, pallido-testaceis sed ad apicem (necnon interdum etiam per suturam et circa scutellum) nigro-infuscatis; pygidio infuscato; pedibus testaceis.

Long. corp. lin. 1—1½.

Europs impressicollis, Woll., Ins. Mad. 150, pl. iii. f. 2 (1854).

———————— Woll., Cat. Mad. Col. 50 (1857).

Habitat insulas Canarienses in truncis ramulisque Euphorbiarum emortuis ubique vulgaris.

This insect, which is found also in Madeira (and from the characters of which I originally established the genus *Europs*, in 1854), is abundant in the dead *Euphorbia*-stems throughout the Canarian archipelago,—on all the islands of which I have captured it, except Gomera; though there can be but little doubt

that it must exist there also. Perhaps the main reason why I did not observe it during our short stay in that island is, that I had merely an opportunity of examining the rotten branches of the *E. canariensis;* whereas it is principally in the decayed wood of the other Euphorbias that it subsists: nevertheless I took a nearly-allied species (described below) out of the *E. canariensis* in Gomera. It does not often attach itself to the *E. canariensis;* though in most of the other Euphorbias it is extremely common, occurring (independently of elevation) wherever the plants present themselves. It may be readily known from the *E. duplicatus* by (*inter alia*) its slightly narrower, less shining, and *longitudinally-impressed* prothorax (which has its large punctures scattered irregularly about, instead of being gathered into a double series on the disc), by its rather less deeply striated and posteriorly-subattenuated elytra, and by its usually broader and darker pygidium.

*5. Europs duplicatus,** n. sp.

E. angustus, subcylindrico-linearis, nitidus et parcissime pubescens; capite prothoraceque pallide rufo-ferrugineis, profunde et remote punctatis, hoc subquadrato, convexo, integro, nitidissimo, punctis discalibus in seriebus duabus dispositis; elytris subparallelis, sat profunde punctato-striatis, pallido-testaceis, sed ad apicem nigro-infuscatis; pygidio triangulari, rufescente; pedibus testaceis.

Long. corp. lin. 1—vix $1\frac{1}{3}$.

Habitat ins. Gomera, in ramis putridis *Euphorbiæ canariensis* in montibus supra San Sebastian crescentis, Februario ineunte A.D. 1858 a meipso detectus.

The distinctions between the *E. duplicatus* and *impressicollis* may be gathered readily both from the diagnosis and the observations given above. I may however just add, that its more shining, *entire*, and slightly broader prothorax (which has its discal punctures gathered into a double longitudinal-row), in conjunction with its somewhat more glabrous surface, more deeply punctured and more parallel elytra (the posterior portion only of which is generally dark,—the suture and scutellary region being almost invariably pale), and its slightly narrower and more rufous pygidium, will at once abundantly characterize it. The only spot in which I have hitherto observed it is in the island of Gomera,—where, during my short sojourn there, with Mr. Gray and the Rev. R. T. Lowe, at the beginning of February, 1858,

I took it, not uncommonly, from out of the putrid stems of the *Euphorbia canariensis*, on the hills to the north of San Sebastian.

Fam. CUCUJIDÆ.

Genus Caulonomus, nov. gen. (Pl. VII. fig. 2.)

Corpus parvum, parallelo-elongatum: *capite* sat magno, *oculis* haud prominentibus, *juguli angulis anticis* vix exstantibus sed (oculo valde obliquo) superne longe ante oculos observandis: *prothorace* (necnon etiam *capite* ab oculos usque ad clypeum, sed vix pone oculos) striâ longitudinali tenui elevatâ utrinque instructo, elongato, angustulo, sublineari: *mesothorace* superne sub-observando, *scutello* transverso: *elytris* apice paulo truncato-abbreviatis, *pygidium* vix tegentibus: *alis* amplis: *abdomine* e segmentis ventralibus 5 composito, segmento apicali reliquis (haud conjunctis) paulo longiore. *Antennæ* (fig. 2 a) longe ante oculos insertæ, capite prothoraceque paulo breviores, clavatæ, articulo 1mo maximo subgloboso, 2do multo minore subquadrato, 3tio hoc vix graciliore fere obtriangulari, 5 sequentibus (i. e. usque ad clavam) obturbinatis subæqualibus (8vo præcedenti vix minore), reliquis clavam magnam elongatam valde laxam triarticulatam efficientibus (9no et 10mo turbinato-poculiformibus, i. e. poculiformibus sed ad apicem parte mediâ argute determinatâ auctis, 11mo his angustiore, subovato ad apicem contracto). *Labrum* (fig. 2 b) porrectum, subquadratum (i. e. ad latera fere rectum, angulis anticis paulo rotundatis sed ad apicem integrum), antice ciliatum. *Mandibulæ* (fig. 2 c) validæ, longiusculæ, angustæ, acutæ, ad apicem paulo inflexæ bidentatæ et intra apicem (præsertim in unâ) dente tertio instructæ, basin versus membranâ transversâ auctæ. *Maxillæ* (fig. 2 d) bilobæ: lobo externo lato, intus et apice valde pubescenti: *interno* minuto, angustissimo, calvo, ad apicem subito inflexo et acutissime uncinato. *Palpi maxillares* articulo 1mo minuto, 2do multo majore crassiore clavato, 3tio breviusculo subovato, ultimo hoc vix longiore sed graciliore subfusiformi: *labiales* (fig. 2 e) articulo 1mo parvo subcurvato, 2do 3tioque majoribus longitudine subæqualibus (illo clavato, hoc vix breviore ovato). *Mentum* breve, transversum, apicem versus paulo attenuatum necnon ad apicem late et profunde excavato-emarginatum. *Ligula* subcornea, longiuscula, antice latodivaricata, apice leviter biloba sed vix pilosa. *Pedes* sat robusti, breviusculi: *femoribus* (præsertim *posticis*) crassius-

culis: *tibiis* gracilibus, breviter bicalcaratis: *tarsis* (nisi fallor) ut in *Læmophlæo*, 5-articulatis sed in maribus heteromeris; articulo 1mo in utroque sexu minutissimo, ægerrime observando, intra tibiarum apicem (in posterioribus saltem) recondito.

Obs. Genus inter *Europs* (Colydiadum) et *Læmophlæus* (Cucujidum) aliquo modo situm,—ad illum habitu generali, prothorace elongato subparallelo in disco longitudinaliter notato elytrisque truncato-abbreviatis, sed striâ sublaterali prothoracicâ, maxillis et fere labro necnon articulo antennali octavo magnitudine deminuto cum hoc melius congruens. A generibus illis ambobus tamen antennarum labrique subquadrati structurâ, præter cætera valde conspicua, omnino discedit.

A καυλὸς, caulis, et *νέμω*, incolo.

The curious little insect, the details of which are described above, would appear, in many respects, to be intermediate between *Europs* (of the *Colydiadæ*), with which it lives in society, and *Læmophlæus* (of the *Cucujidæ*); though its most essential features would certainly indicate a closer affinity with the latter than with the former. In its general facies it is perhaps more suggestive of *Europs* than of *Læmophlæus*,—its elongate and almost parallel prothorax (which has a slight central depression down the disk, answering to the much deeper one of the *E. impressicollis* and the double series of punctures in the *E. duplicatus*), in conjunction with its apically abbreviated elytra, being points in which it nearly coincides with that genus. Nevertheless in the whole of its *instrumenta cibaria*, and the structure of its antennæ, as well as in its *less* truncated elytra, it recedes entirely from *Europs*, and makes a much nearer approach to the various groups of the *Cucujidæ*.

With *Læmophlæus* and *Phlœostichus*, indeed, *Caulonomus* has an immense deal in common—agreeing with the former in its minute, unciform, inner maxillary-lobe, and (to a considerable extent) in the shape of its labial organs and palpi; whilst its clavated antennæ (with their enlarged basal joint and diminished eighth one) almost tally with those of the latter. But I would regard its sublateral prothoracic costa, and the reduced ante-claval articulation of its antennæ, as more significant than anything else in affiliating it with the *Cucujidæ*—this peculiarity in the dimensions of the eighth joint being strongly expressed in *Pediacus* and *Phlœostichus*, and also in most of the *Læmophlæi* and *Silvani*, whilst the prothoracic line is more or less indicative of the *Cucujidæ* generally. In most of the *Cucujidæ* this hair-like submarginal costa

is very distinct, and is continued along the sides of the *head* likewise (in the same manner as it is along the pronotum); but in *Caulonomus* (which would appear to be osculant between that family and the *Colydiadæ*) the prothoracic line is very delicate, and only just traceable, whilst the hinder region of the head is free from it altogether—it being only indicated on the anterior portion, namely, from the clypeus to either eye. I lay less stress on the construction of its feet, because the basal joint in most of the *Cucujidæ* is of such infinitesimal magnitude as to be extremely difficult of observation—so that it is often almost impossible to decide for certain whether it be absent or present; and it is, consequently, a character concerning which we may be liable to err. Nevertheless I may state that, so far as I have been able to satisfy myself on the subject, I *believe* that the tarsi are (as regards the number of their articulations) on the type of those of *Læmophlœus* and the allied groups, namely, pentamerous in the females and heteromerous in the males (the basal one, in both sexes, being excessively minute, and buried in the apex of the tibia).

Having thus stated the main points in which our present genus agrees with the *Cucujidæ*, and with *Læmophlœus* and *Phlœonomus* in particular, I may add that it is removed from them in the exact proportions of its antennal joints (the second and third of which are shaped somewhat like those in *Pediacus*, whilst the ultimate one is much narrower than the preceding two), in its large subquadrate and apically-truncated upper-lip, in its narrower mandibles, in the rather shorter terminal-articulation of its palpi, and in its posteriorly-abbreviated elytra (which leave the pygidium exposed, though not so much as is the case in *Europs*).

6. *Caulonomus rhyzophagoides**, n. sp. (Pl. VII. fig. 2.)

C. angustus, piceus vel rufo-piceus, nitidus et fere calvus [oculo valde armato minute et parce pubescens]; capite prothoraceque minute punctulatis, hoc antice vix latiore, in disco (præsertim antice) leviter longitudinaliter impresso; elytris leviter punctato-striatis, plus minus piceo-ferrugineis, ad apicem necnon interdum circa scutellum plerumque nigrescentioribus; antennis piceis, basi rufescentioribus; pedibus ferrugineo-piceis.

Variat colore omnino dilutiore.

Long. corp. lin. 1—1$\frac{1}{3}$.

Habitat ins. Lanzarota, Teneriffa et Hierro, in ramulis Euphorbiarum emortuis unà cum *Europs impressicollis* degens, sed multo rarior.

First detected by Mr. Gray and myself, during January, 1858,

in the rotten branches of the various Euphorbias, on the Risco (above the Salinas), in the north of Lanzarote; and two examples were subsequently captured by Mr. Gray in the island of Hierro. In February and May of the following year I took it, in similar spots, on the mountains above Sta. Cruz of Teneriffe—but, also, very sparingly. It appears, like the *Europs impressicollis*, with which it lives in company, to be confined entirely to the Euphorbias—in most of the species of which I have observed it, except the *E. canariensis*. At first sight it so nearly resembles its associate that it might be easily mistaken for it; and it is possible, therefore, that we may have occasionally overlooked it amongst the specimens of that insect.

Genus Læmophlœus.

Erichson, Nat. der Ins. Deutsch. iii. 315 (1848).

7. *Læmophlœus clavicollis*, Woll.

L. angustus, rufo-ferrugineus, subnitidus, pubescens; capite prothoraceque subconvexis, punctulatis; elytris striatis necnon (ad latera saltem) longitudinaliter costatis; pedibus rufo-testaceis.

Mas, antennis paulo longioribus, capite postice et prothorace antice latioribus.

Long. corp. lin. $\frac{2}{3}$—1.

Læmophlœus clavicollis? Woll., Ins. Mad. 163 (1854).

——————— ———? Id., Cat. Mad. Col. 53 (1857).

Habitat insulas Canarienses, sub cortice Euphorbiarum laxo ubique frequens.

I have been compelled to query this insect simply because I have not now the types of the *L. clavicollis*, in my possession, for comparison: but I believe that it is strictly identical with the Madeiran species; and I think it is not unlikely, moreover, that the *L. vermiculatus*, of the "Insecta Maderensia," will prove to be, after all, but a small state of the *clavicollis*. Be this, however, as it may, the present insect is universal throughout the Canarian archipelago, on all the islands of which I have captured it, except Gomera (where, nevertheless, it must doubtless exist likewise). I have taken it from beneath the loose bark of the various Euphorbias in Lanzarote, Fuerteventura, Grand Canary, Teneriffe, Palma and Hierro; and even on the little island of Lobos, in the Bocayna Strait. It may be known by its very parallel outline (especially of the female sex, in which the head is not at all

enlarged), sericeous surface and minute size—the smaller specimens descending to two-thirds of a line in length, whilst the larger ones do not exceed a line. Although more particularly attached to the Euphorbias, it is, apparently, not exclusively so, as I have occasionally found it under the bark of the larger trees.

Genus Pristoscelis, nov. gen. (Pl. VII. fig. 3.)

Corpus sat parvum, parallelo-elongatum, valde depressum, calvum: *capite* sat magno, *oculis* prominulis: *prothorace* subquadrato, æquali (i. e. vix foveolato, haud striâ sublaterali impresso, nec ad latera denticulato): *scutello* transverso: *elytris* amplis: *abdomine* e segmentis ventralibus 5 composito. *Antennæ* (fig. 3 a) longe ante oculos insertæ, capite prothoraceque vix breviores, clavatæ, articulo 1mo sat magno subgloboso, 2do paulo minore, 3tio longiore sed vix graciliore, sequentibus 5 (i. e. ad clavam) tertio paulo brevioribus, inter se subæqualibus (nec alternatim majoribus et minoribus), reliquis clavam elongatam laxam triarticulatam sed haud abruptam efficientibus (9no 10moque subpoculiformibus, 11mo angustiore subgloboso). *Labrum* parvum, submembranaceum, sub clypeo postice absconditum, antice paulo rotundatum longissime et dense ciliatum. *Mandibulæ* (fig. 3 b) validæ, longiusculæ, subtriangulares, acutæ, ad apicem paulo inflexæ et (præsertim unâ) longe bifidæ, intus membranâ robustâ subpubescenti auctæ. *Maxillæ* (fig. 3 c) bilobæ: *lobo externo* angusto, pubescenti: *interno* latiore, ad apicem ipsum minute sed acute uncinato et intra apicem longissime setoso-pubescenti. *Palpi maxillares* articulo 1mo parvo flexuoso, 2do majore crassiore subclavato, 3tio paulo breviore, ultimo hoc haud latiore sed longiore fusiformi: *labiales* (fig. 3 d) articulo 1mo parvo subflexuoso, 2do majore crassiore subclavato, ultimo maximo crasso ovato apice acuminato. *Mentum* transversum, basi latum, apicem versus facile sed valde angustius, ad apicem ipsum recte truncatum. *Ligula* in mediâ parte cornea cordata, sed ad apicem lobis duobus membranaceis tenuissimis divergentibus valde etl onge pubescentibus aucta. *Pedes* sat robusti: *tibiis* ad apicem externum oblique truncatis, ad internum breviter bicalcaratis, *posticis* (fig. 3 e) in sexu masculo curvatis validis et per marginem internum dentibus (circa 9 vel 10) distinctis inter se disjunctis remotis armatis: *tarsis* pilosis in utroque sexu pentameris et inter se similibus; articulis 1mo, 2do et 3tio magnis latiusculis subæqualibus (aut etiam vix longitudine

decrescentibus), gradatim leviter bilobis, 4to minuto inter lobos tertii sub-recepto, ultimo longissimo vix clavato *unguiculis* magnis simplicibus munito.

Obs. Genus *Pediaci* formam simulans et illo affinitate proximum ; sed prothorace simplici (nec ad latera denticulato), antennarum articulis intermediis inter se subæqualibus (nec alternatim majoribus et minoribus), maxillarum lobo externo angustulo, interno latiore et ad apicem ipsum distincte uncinato (nec inarmato), ligulâ in medio corneâ cordatâ, mento ad apicem haud emarginato, tibiis posticis masculis curvatis et per marginem internum fortiter ac mirande denticulatis, necnon tarsorum articulo basali (in utroque sexu) magno, secundi longitudine (nec minuto), præter cætera, a *Pediaco* recedit.

A πρίστος, qui lignum serrâ desecat, et σκελὶς, tibia [i. e. tibia mascula postica].

So nearly, at first sight, does the present genus assimilate *Pediacus*, that it was not until I had examined it critically that I perceived its distinctions,—which, nevertheless, are very important ones. Thus, not only is its pronotum simple (being alike free from discal foveæ and lateral denticulations), but its intermediate antennal joints are subequal (instead of being alternately large and small, as in the members of that group) ; its outer maxillary-lobe, also, is much narrower than is the case in the *Pediaci*, whilst the inner one (instead of being unarmed) is minutely uncinate at the tip ; the central portion of its ligula is subcorneous and singularly *cordate ;* its mentum is totally unemarginate in front ; its first tarsal-articulation (instead of being minute) is large, and quite equal to (if not indeed somewhat longer than) the second ; and its hinder male-tibiæ are most curiously developed,—being curved and robust, and beset internally with nine or ten most distinct (but totally disconnected) teeth. In its flattened body, pallid hue and general contour, *Pristoscelis* agrees with *Pediacus*.

8. *Pristoscelis deplanatus*, n. sp. (Pl. VII. fig. 3.)

P. rufo-ferrugineus, depressus ; capite prothoraceque confertissime punctatis; elytris rufo-testaceis, subnitidis, leviter punctato-striatis, singulo costâ submarginali elevatâ longitudinali instructo ; antennis pallide rufo-ferrugineis ; pedibus rufo-testaceis.

Long. corp. lin. $1\frac{2}{3}$—2.

Habitat ins. Teneriffa, Palma et Hierro, sub cortice Euphor-

biarum laxo arido (necnon rarius etiam in *Pinis canariensibus*), passim.

The *P. deplanatus* was taken abundantly, by myself, during February, 1858, from under the dry outer fibre of dead Euphorbias, at a low elevation in the region of El Golfo, on the west of Hierro; and, in less profusion, by Mr. Gray, in the east of that island. It does not appear, however, to be confined exclusively to the Euphorbias (though evidently most partial to them); as I captured a single example, during the following May, beneath the bark of a *Pinus canariensis* at the Agua Mansa of Teneriffe; and another, in a similar position, at the edge of the Barranco above Santa Cruz of Palma. Out of 65 specimens now before me, 32 are males and 33 females.

Fam. TELMATOPHILIDÆ.

Genus Thallestus, nov. gen. (Pl. VII. fig. 4 et 6.)

Corpus parvum, oblongum vel elliptico-oblongum, subconvexum, pubescens: *prothorace* ad latera minutissime subcrenulato et striâ elevatâ sublaterali utrinque instructo: *scutello* transverso: *alis* amplis. Antennæ (fig. 6 a) capitis prothoracisque longitudine, subgraciles, clavatæ, articulo 1mo leviter robusto, 2do graciliore paulo breviore, sequentibus 7 (i. e. ad clavam) latitudine subæqualibus, a 3tio longiusculo longitudine gradatim decrescentibus reliquis clavam magnam laxam abruptam biarticulatam efficientibus (10mo magno poculiformi, 11mo orbiculato basi truncato). *Labrum* submembranaceum, transversum, antice rotundatum integrum ciliatum. *Mandibulæ* (fig. 6 b) validæ, acutæ, ad basin externam fisso-sinuatæ, intus excisæ ciliatæ et membranâ auctæ. *Maxillæ* (fig. 6 c) bilobæ: *lobo externo* subovato, apice valde et longe pubescenti: *interno* paulo breviore, valde pubescenti, inarmato. *Palpi maxillares* articulo 1mo angusto flexuoso, 2do 3tioque crassioribus subæqualibus, ultimo elongato, fusiformi basi truncato: *labiales* (fig. 6 d) articulo 1mo subflexuoso, 2do paulo longiore crassiore, ultimo maximo crasso subsecuriformi-truncato. *Mentum* amplum, elongatum, basi latum, inde ad apicem valde et facile angustatum, summo apice sat profunde excavato-emarginato. *Ligula* cornea, quadrata, apice membranâ divergenti pilosâ aucta. *Pedes* (fig. 6 e) graciles: *tibiis* gracilibus, apice calcaratis: *tarsis* 5-articulatis, subtus longe pilosis, articulis 1mo, 2do et 3tio subæqualibus (2do paulo longiore), inter se (præsertim 1mo et 2do) arcte applicatis (suturis valde obliquis et ægre observandis), 4to

minutissimo, ultimo elongato subclavato *unguiculis* simplicibus munito.

Obs. Genus *Biphyllo* proximum, sed antennis longioribus, articulis intermediis magis elongatis, striâ prothoracicâ secundâ (i. e. internâ) obsoletâ, tibiis gracilioribus, tarsorum articulis primo et secundo inter se arctius applicatis, necnon speciebus pallidis concoloribus, distinctum.

A θαλλὸς ramulus, et ἡ̓στὸς, delectatus.

Although at first sight not very apparent, nevertheless after a close examination of it, I have no doubt whatever on the affinities of this interesting genus. It is unquestionably closely allied to *Biphyllus* and *Diplocœlus*,—with which in the details of its oral organs and feet, as well as in its sublateral prothoracic costæ, it is almost coincident; and the only question that can arise is, as to the position which, in a natural system, these few much disputed forms should occupy. Without wishing to discuss this point in the present paper, I may just add that I am rather inclined, with M. Jacquelin-Duval, to regard these genera as the exponents of a separate family, the *Telmatophilidæ*, and so retain the *Mycetophagidæ* within the restricted limits imposed upon it by Erichson,—its representatives having their tarsi tetramerous, but with the anterior pair in the male sex trimerous. It is undoubtedly true that the habits and external facies of the insects under consideration are nearly identical with those of the *Mycetophagidæ;* and so closely indeed does the Canarian *Thallestus* assimilate *Typhæa*, that it might be almost mistaken for a member of that group: nevertheless the details of its mouth have very little in common with it, whilst (together with those of its feet) they accord entirely with the corresponding parts of *Biphyllus*. Moreover none of the *Mycetophagidæ proper*† possess, so far as I am aware, the very significant character of sublateral prothoracic costæ and grooves which is so conspicuous in *Biphyllus*, *Diplocœlus* and *Thallestus*, and which would tend to affiliate them with the various genera approaching *Lœmophlœus*, &c. of the *Cucujidæ*, rather than within

† *Mycetæa*, it is true, has a submarginal costa on its pronotum well defined; and there is a slight indication of one even in the nearly-allied *Symbiotes:* but I do not regard either of these as belonging to the *Mycetophagidæ proper*,—their exact position being disputed by almost every Coleopterist who has treated of them. Some have placed them with the *Endomychidæ*, some with the *Cryptophagidæ*, others with the aberrant *Mycetophagidæ;* whilst, more recently, a separate family has been proposed for their reception. Of the near affinity, however, with the *Telmatophilidæ*, and certain members of the *Cryptophagidæ*, there can, I think, be no doubt.

those around *Mycetophagus*. As to their connection with the *Cleridæ*, in juxta-position with which some authors have placed them, it is difficult to conceive in what it can possibly consist.

Although so similar to *Biphyllus*, in its structural minutiæ, *Thallestus* is nevertheless certainly distinct from it. The two species described below are of a uniformly pallid hue, having no tendency to fasciæ, or markings of any kind; their antennæ, also, are longer and slenderer than is the case in *Biphyllus* (the intermediate joints particularly being more elongate), their tibiæ are narrower, and the edges of their prothorax are less coarsely crenulated.

9. *Thallestus subellipticus*,* n. sp. (Pl. VII. fig. 4.)

T. elliptico-oblongus, ferrugineus, breviter sericeo-pubescens; prothorace convexo, transverso, parce punctato, ad latera vix æqualiter rotundato (basi subconstricto); elytris (unà cum antennis pedibusque) clarioribus, convexis subellipticis basi truncatis, leviter substriato-punctatis, limbo inerassato.

Long. corp. lin. $1\frac{1}{2}$.

Habitat in ramis putridis *Euphorbiæ canariensis*, in montibus supra Sanctam Crucem Teneriffæ mense Februario A.D. 1859 a meipso repertus.

The rather larger size and more elliptic outline of this species, in conjunction with its convexer and more *finely* sericeous surface, its less abbreviated and somewhat posteriorly-constricted prothorax, its altogether lighter sculpture, and the more thickened margin of its elytra, will separate it readily from the *T. typhæoides*. Its sublateral prothoracic costa, also, is a little more evident; and there are just traceable indications of a *second* line on either side of the pronotum behind, within the other (or outer one). The few specimens of it which have as yet come beneath my notice were captured by myself, during February, 1859, in the putrid stems of the *Euphorbia canariensis*, on the mountains above Santa Cruz of Teneriffe.

10. *Thallestus typhæoides*,* n. sp. (Pl. VII. fig. 6.)

T. oblongus, angustulus, ferrugineus, longe et dense pubescens; prothorace brevi-transverso, parce et profunde punctato, ad latera æqualiter rotundato; elytris (unà cum antennis pedibusque) clarioribus, subparallelis, substriato-punctatis, limbo vix inerassato.

Long. corp. lin. $1\frac{1}{3}$—vix $1\frac{1}{2}$.

Habitat ins. Gomeræ, Februario ineunte A.D. 1858 in ramis *Euphorbiæ canariensis* putridis sat copiose captus.

As may be gathered from the foregoing remarks, the *T. Typhæoides* may be distinguished from the last species by its rather smaller size and narrower and more parallel outline, as well as by its less convex surface, coarser and longer pubescence, by its shorter prothorax (which is *equally* rounded at the sides), deeper sculpture, and by the less thickened margin of its elytra. I have observed it hitherto only in the island of Gomera, where, early in February, 1858, I took it in considerable profusion from out of the rotten branches of the *Euphorbia canariensis* on the hills immediately to the north of San Sebastian,—in which locality it was subsequently captured by Mr. Gray.

Fam. CRYPTOPHAGIDÆ.

Genus Cryptophagus.

Herbst, Käf. iv. 172 (1792).

11. *Cryptophagus fusiformis*, n. sp.

C. oblongo-fusiformis, angustulus, fusco-ferrugineus, pube minus elongatâ subdepressâ vestitus; prothorace profunde et dense punctato, ad latera subrecto, denticulo medio acuto; elytris subfusiformibus (i. e. antice et postice subattenuatis, vel ibidem utrinque oblique subtruncatis), sat dense punctatis; alis obsoletis.

Long. corp. lin. vix $\frac{3}{4}$.

Habitat Teneriffam, præcipue sub cortice Euphorbiarum in montibus supra Sanctam Crucem crescentium deprehensus.

The small size and rather narrow and fusiform outline of this *Cryptophagus*, in conjunction with its short and depressed pubescence, the somewhat straightened sides of its prothorax, and (which is very unusual in the present genus) its obsolete wings, will sufficiently distinguish it. In its habits it is more strictly indigenous than most of the Canarian *Cryptophagi*, occurring in spots far removed from habitations,—such as at Las Mercedes, and from beneath the bark of dead Euphorbias on the mountains above Santa Cruz, of Teneriffe (which is the only island in which I have hitherto observed it).

Fam. LATHRIDIADÆ.

Genus Corticaria.

Marsham, Ent. Brit. i. 106 (1802).

12. *Corticaria maculosa*, Woll.

C. elongato-ovata, fulvo-ferruginea, pubescens; capite pro-

thoraceque profunde punctatis, hoc ad latera crenulato, foveâ postmediâ minus profundâ impresso; elytris substriato-punctatis, maculâ nigrâ postmediâ plus minus distinctâ in singulo ornatis; antennis apicem versus obscurioribus.

Long. corp. lin. 1—1$\frac{1}{8}$.

Corticaria maculosa, Woll., Ann. of Nat. Hist. (Ser. 3), ii. 408 (1858).

Habitat insulas Canarienses, sub cortice Euphorbiarum laxo desiccato, passim.

The *C. maculosa* occurs also in the Madeiran group,—having been characterized by myself, in 1858, from specimens taken near Funchal. It does not appear to be attached exclusively to the Euphorbias, though certainly more common beneath the dead outer fibre of them than elsewhere; so that it could not properly be omitted in the present Paper. It seems universal (though nowhere very abundant) throughout the Canarian archipelago,—Grand Canary being the only one of the seven islands on which I do not happen to have observed it. I have even captured it from out of the old *Euphorbia*-stems on the little island of Lobos, in the Bocayna Strait. It is a somewhat variable insect, the postmedial patch of its elytra being at times (especially in immature examples) quite obsolete,—in which case the surface is wholly ferruginous. The specimens which I found at El Golfo, on the west of Hierro, were principally of this latter character.

Fam. HISTERIDÆ.

Genus Eutriptus, nov. gen. (Pl. VII. fig. 7.)

Corpus parvum, oblongum, glaberrimum: *capite* subretractili, striâ frontali integrâ instructo: *prothorace* transverso-subquadrato, apice sat emarginato, ad latera ipsa striâ marginali notato; *prosterno* angusto, bistriato, basi rotundato producto, lobo antico magno lato subcarinato, antice rotundato: *mesosterno* brevi, apice leviter emarginato, prosterni basin recipiente; *scutello* minuto, triangulari: *elytris* leviter striatis: *alis* amplis. *Antennæ* (fig. 7 a) sub angulo frontis insertæ; *scapo* magno, subflexuoso et apicem versus valde incrassato; *funiculo* distinctissime 6-articulato, articulo 1mo elongato clavato, reliquis brevibus longitudine subæqualibus, latitudine vix crescentibus; *capitulo* abrupto, solido, globoso-ovato. *Labrum* breve, transversum, subcorneum, angulis anticis rotundatis, apice fere integrum. *Mandibulæ* æquales, subtriangulares, apice inflexæ acutæ, intus infra apicem dente

magno armatæ, inde ad basin longe pubescentes. *Maxillæ* (fig. 7 b) bilobæ: *lobo externo* membranceo, longissime et dense pubescenti: *interno* breviore, per marginem externum usque ad apicem ipsum anguste et valde incrassato, uncum obtuse incurvum efficiente, intus membranaceo et dense pubescenti. *Palpi maxillares* articulo 1mo parvo flexuoso, 2do 3tioque majoribus subæqualibus incrassatis, ultimo elongato, fusiformi basi truncato: *labiales* articulo 1mo minuto, 2do 3tioque elongatis subæqualibus (illo subclavato, hoc fusiformi basi truncato). *Mentum* corneum, tringulare apice truncatum et ibidem profunde excavatum. *Ligula* subcornea, apice in medio longissime pencillata necnon ad latera *paraglossis* maximis angustis tenuissimis membranaceis divaricatis interne ciliatis aucta. *Pedes* robusti: *femoribus* crassis, subquadrato-oblongis: *tibiis* intus inermibus, curvatis (præsertim *anterioribus*); *anticis* (fig. 7 c) latis extus angulato-tridendatis; *intermediis* vix angustioribus, extus inæqualibus et 4-spinosis; *posticis* basin versus angustis, ante apicem subito leviter dilatatis et ibidem extus bispinulosis; *anticarum angulo apicali interno* in spinam elongatam corneam curvatam exstantem producto: *tarsis* articulo 1mo elongato, 2do, 3tio, 4to brevioribus subæqualibus, ultimo elongato vix clavato *unguiculis* simplicibus munito.

Obs. Genus funiculo distinctissime 6-articulato, capitulo abrupto solido, maxillarum lobo interno apice robuste (sed anguste) uncinato, necnon tibiarum anticarum angulo apicali interno in spinam corneam elongatam excurvatam producto, inter genera Histeridum adhuc cognita anomalum.

Ab ἓν, bene, et τρίβω, frico.

Amongst the forty-four genera of the *Histeridæ* so elaborately enunciated in De Marseul's Monograph, there is certainly nothing which approaches the present one in its most distinctive features. Indeed its 6-jointed funiculus would of itself suffice to characterise it; for the only known form in which this particular number of joints (or in fact *less than seven*) prevails, in that portion of the antennæ, is *Monopolius* (of which hitherto but a single exponent has been detected) from the Cape of Good Hope,—an insect widely different from *Eutriptus* in the other details of its structure. Its various peculiarities will be easily gathered from the diagnosis; nevertheless I may just add that its two most anomalous ones (apart from its funiculus) are the formation of its inner maxillary-lobe and of its anterior tibiæ,—the former of which is curiously uncinated at its apex (the *outer* margin being thickened

into a narrow rim, which merges into an obtusely-curved hook at the tip); whilst the latter has its inner apical-angle produced into a long and acute spine, which, being outwardly-directed, gives that portion of the leg a very singular appearance. The insect on which I have erected the genus is as remarkable in its habits as it is in its structure,—being confined exclusively (so far as I have hitherto observed) to the moist and rotting *Euphorbia*-stems throughout the various Islands of the Canarian archipelago, residing principally at the *lower* portions of them, where they come in contact with (and are often buried in) the damp earth.

13. *Eutriptus putricola*,* n. sp. (Pl. VII. fig. 7.)

E. aterrimus, subconvexus, politissimus; capite prothoraceque minute et parce punctulatis; elytro singulo striis duabus obscuris humeralibus obliquis, duabus sublateralibus integris, quatuor levioribus interruptis remote punctatis (plus minus obsoletis) discalibus et unâ suturali antice evanescenti notato; antennis pedibusque piceis, illarum capitulo testaceo.

Long. corp. lin. 1—1¼.

Habitat insulas Canarienses, sub cortice Euphorbiarum laxo putrido, hinc inde vulgaris.

This insect is probably universal, in the rotten *Euphorbia*-stems, throughout the Canarian archipelago; nevertheless, up to the present time, I have taken it in only five islands out of the seven,—namely, Lanzarote, Fuerteventura (and even on the small adjacent rock of Lobos), Grand Canary, Teneriffe and Hierro. It was first captured by myself and Mr. Gray on the Risco (above the Salinas) in the north of Lanzarote, during January, 1858; but I took it in much greater abundance, subsequently, in the *Euphorbia*-grounds near Orotava of Tèneriffe, and in the lower district of El Golfo, on the west of Hierro.

Genus Eubrachium, nov. gen. (Pl. VII. fig. 9.)

Corpus minutum, plus minus rotundato-ovale, ubique subæqualiter punctatum necnon parce et breviter pubescens: *capite* subretractili, striâ frontali obsoletâ: *prothorace* antice attenuato, apice sat emarginato, longe intra latus striâ profundâ magnâ utrinque notato; *prosterno* latiusculo, subquadrato, versus utrumque latus striâ longitudinali subcurvatâ instructo, basi in medio vix producto rotundato, lobo antico lato brevi subtruncato: *mesosterno* brevi, ad angulos anticos oblique truncato, apice leviter emarginato, prosterni

basin recipiente ; *scutello* minutissimo, subtriangulari : *elytris* haud striatis (aut saltem striis, unâ vel duabus, obsoletissimis brevibus obliquis prope humeros vix observandis). *Antennæ* (fig. 9 a) sub angulo frontis (in sinu minutissimo) insertæ ; *scapo* magno, flexuoso et apicem versus valde incrassato ; *funiculo* 7-articulato, articulo 1mo elongato crassiusculo, 2do paulo breviore graciliore, reliquis 5 parvis subæqualibus longitudine vix decrescentibus ; *capitulo* abrupto, solido, subgloboso-ovato basi paulo truncato. *Labrum* breve, transversum, angulis anticis rotundatis, apice subrotundatum integrum. *Mandibulæ* (fig. 9 b) subporrectæ, æquales, subtriangulares, apice inflexæ acutæ, intus mox infra apicem (præsertim in unâ) dente acuto armatæ, in medio membranâ tenuissimâ pubescenti instructæ. *Maxillæ* (fig. 9 c) bilobæ : *lobo externo* lato, tenuissime membranaceo, pubescenti : *interno* breviore, angustiore, per marginem externum usque ad apicem ipsum angustissime incrassato, uncum brevem obtuse incurvum efficiente, intus membranaceo et dense pubescenti. *Palpi maxillares* articulo 1mo minutissimo, 2do elongato crassiore subclavato, 3tio hujus latitudine sed brevi, ultimo elongato-ovali : *labiales* (fig. 9 d) e scapis ligulæ connatis surgentes, articulo 1mo gracili flexuoso, 2do hujus longitudine sed crassiore subpoculiformi, ultimo longiore crassiore subovato. *Mentum* magnum, corneum, transversum, basi latum sed usque ad angulum utrumque anticum acutum gradatim etiam latius, antice utrinque bi-emarginatum (excavatione externâ magnâ profundâ subobliquâ, internâ minore angustiore) necnon in medio recte truncatum. *Ligula* membranacea, antice *paraglossis* magnis tenuissimis membranaceis divaricatis aucta. *Pedes* elongati, graciles : *femoribus* rectis, gracilibus : *tibiis* intus inermibus, subcurvatis, gracilibus, sed *anticis* (fig. 9 e) a medio usque ad apicem extus subito et valde dilatatis, patellam elongato-subquadratam externam breviter spinulosam efficientibus, *intermediis* et *posticis* gracilibus (illis extus versus apicem parce setulosis, his mere breviter pubescentibus) : *tarsis* filiformibus, articulis 1mo, 2do, 3tio, 4to inter se subæqualibus (longitudine latitudineque vix decrescentibus), ultimo leviter elongato subfiliformi *unguiculis* simplicibus munito.

Obs.—Genus menti sternorumque formâ aliquo modo *Epicerus* simulans, sed species sunt minores (minutissimæ), ubique grosse subæqualiter punctatæ necnon etiam breviter

(sed parce) pubescentes, elytris haud striatis et pronoto longe intra utrumque latus striâ magnâ profundâ impresso ; præter hæc pedum gracilium structurâ, tibiis anticis a medio usque ad apicem in patellam elongato-subquadratam extus subito dilatatis ab omnibus *Histeridis* mihi cognitis omnino discedunt.

Ab $\varepsilon\tilde{\upsilon}$, bene, et $\beta\rho\alpha\chi\acute{\iota}\omega\nu$, brachium.

The anomalous little insects for which the present genus is established are quite unrepresented (unless indeed I am very much mistaken) in De Marseul's elaborate Monograph. In the construction of their sterna, broad, membraneous outer maxillary-lobe and their maxillary-palpi, as well as in their large and apically bi-emarginated mentum, they have indeed a good deal in common with *Epierus ;* but in their excessively minute size, coarsely and regularly punctured, and (beneath a high magnifying power) even sparingly-*pubescent* surfaces, *unstriated* elytra, and the wide and deep line with which either side of their pronotum is impressed *at a considerable distance* within the edge, would, apart from other differences, at once separate them from the members of that group. Nevertheless their peculiarly *structural* features are still more remarkable,—amongst which the abbreviated second joint of their labial palpi, which is not longer (although broader) than the first, their narrowly uncinated inner maxillary-lobe (as in *Eutriptus*), and their rather long and *slender* legs, accompanied with the sudden and singular dilatation of the anterior-tibiæ (which are expanded on their outer edge, from the middle to the apex, into an elongate-squarish plate), should be especially noticed. In the formation of their tarsi, also, the first four joints of which are subequal (the basal one being, *if anything*, a trifle larger than the others), no less than in the elongate second joint of their funiculus (which is but slightly shorter than the preceding one), the exponents of *Eubrachium* still further recede from the *Epieri*.

14. *Eubrachium ovale*,* n. sp. (Pl. VII. fig. 9.)

B. nigrum, ovale, subnitidum, punctatum, parce et minutissime cinereo-pubescens ; prothorace ad latera subsinuato, striâ laterali subcurvatâ ; elytris postice subattenuatis ; antennis pedibusque piceis, illarum capitulo pallido-ferrugineo.

Long. corp. lin. $\frac{3}{4}$—vix 1.

Habitat sub cortice Euphorbiarum laxo putrido in regione "El Golfo" dictâ insulæ Hierro, mense Februario A.D. 1858, unà cum *Eutripto* captum.

Found exclusively, so far as I have hitherto observed, beneath the loose rotten bark of the Euphorbias, particularly about the lower portions of the stems (where they come in contact with the damp earth),—under which circumstances I took it, along with (though far scarcer than) the *Eutriptus putricola*, in the region of El Golfo, on the west of Hierro, during February, 1858. In company with it I also captured a closely allied species, the *E. politum*,—from which, however, the *E. ovale* may be known by its rather larger size and less rounded outline, by its somewhat more depressed, less shining and less glabrous surface, by its prothorax being more sinuated at the sides (with its sublateral line more curved), and by its entire punctuation being stronger and much more dense. It is likewise nearly related to a third† species, which seems to be confined to the laurel-districts of higher elevations; but is a little more *oval* in outline (being just perceptibly less acute both before and behind), less deeply punctured, and with its sublateral prothoracic line a trifle less straightened,—it being more evidently *curved-outwards at the base* (towards the posterior angle). For the figure of the *E. ovale* I am indebted to Professor Westwood.

† I subjoin a diagnosis of this third species,—which will serve to point out its distinctions from its two near allies, described above.

Eubrachium punctatum, n. sp.

B. nigrum, elliptico-ovale (antice et postice subacutum), subnitidum, profunde punctatum, parce et minutissime cinereo-pubescens; prothorace longiusculo, ad latera subsinuato, striâ laterali subrectâ; elytris postice attenuatis, punctis sub-sulcato-confluentibus; antennis pedibusque piceis, illarum capitulo ferrugineo.

Long. corp. lin. $\frac{3}{4}$—vix 1.

Habitat in locis editioribus sylvaticis Teneriffæ et Palmæ, rarissimum.

Apart from its attachment to the laurel-regions of intermediate and lofty elevations (in lieu of the *Euphorbia*-districts of the lower altitudes), the *E. punctatum* may be recognized from the *ovale* (to which it is very closely allied) by being a little more *elliptic* in outline (or subacute both before and behind), by its distinctly coarser punctuation (especially of the elytra, where the punctures have a tendency, when viewed beneath the microscope, to be disposed in irregular longitudinal grooves, or furrows,—and, therefore, in a measure, sub-confluent), by its antennal-club being more brightly ferruginous, and by its lateral prothoracic line being straighter,—or not at all curved-outwards at the base (as in that species) towards the posterior angle. It appears to be very scarce, occurring under the bark and chippings of forest-trees within the damp sylvan districts. I have taken it in the wood of the Agua Garcia, as also above Taganana and at Las Mercedes, of Teneriffe; and in the Barranco de Galga, of Palma.

15. *Eubrachium politum*,* n. sp.

B. piceo-nigrum, rotundato-ovale, convexum, nitidum, parce et leviter punctatum, fere calvum; prothorace ad latera oblique subrecto, striâ laterali subrectâ; elytris postice attenuatis; antennis pedibusque piceis, illarum capitulo ferrugineo.

Long. corp. lin. $\frac{2}{3}$—$\frac{3}{4}$.

Habitat ins. Lanzarote et Hierro, sub cortice Euphorbiarum, rarissimum.

The present insect may be known from its two allies by being somewhat smaller and more convex, by its more rounded outline and brighter and more glabrous surface, by its prothorax being straighter (though very oblique) at the sides, and by its punctuation being altogether finer and much less dense. Three specimens of it only have as yet come beneath my notice,—two of which I captured, in company with the last species and *Eutriptus putricola*, from under the loose bark of Euphorbias in the lower region of El Golfo, on the west of Hierro, during February, 1858; and the other on the *Euphorbia*-covered cliffs above the Salinas, in the north of Lanzarote, during March of the following year.

Fam. CLERIDÆ.

Genus Clerus.

Geoffroy, Ins. des Env. de Paris, 303 (1764).

At first sight the interesting little insect described below might be almost referred to the genus *Omadius;* nevertheless on closer inspection it will be found (judging from the published diagnosis) to lack the main features of that group,—as, for instance, the subapproximate eyes and simple mandibles. I would regard it, therefore, as a *Clerus*, with which in its oral organs it has sufficiently in common. Its antennæ are perhaps somewhat slenderer than in the typical *Cleri*, and the terminal joint of its labial-palpi is a little more elongate, whilst that of its maxillary pair is rather more fusiform, and subattenuated towards its extremity; but in its deeply bilobed, membraneous upper-lip and the obtuse tooth within the apex of its mandibles, as well as in the form of its (very thin) mentum and ligula, it is nearly coincident with the ordinary *Cleri*.

16. *Clerus Paivæ*,* n. sp. (Pl. VII. fig. 5.)

C. subænescenti-nigropiceus, pilis robustis demissis albidocinereis vestitus et setulis paucis longissimis erectis ad-

spersus ; oculis magnis, prominentibus ; prothorace ad apicem dilutiore, pone apicem transversim constricto ; elytris fasciis duabus transversis dentatis (unâ sc. postmediâ et alterâ ante apicem) pilorum carentibus (ergo nigris), et punctulis minutis nigrescentibus longitudinaliter dispositis ornatis ; antennis dilute testaceis, ad apicem obscurioribus ; pedibus testaceis, femoribus versus apicem, tibiis ad basin ipsam tarsisque hinc inde picescentibus.

Variat antennis pedibusque plus minus obscurioribus.

Long. corp. lin. $1\frac{1}{2}$—vix 2.

Habitat Euphorbias emortuas, passim ; in ins. Gomera et Palma solis adhuc haud observavi. Species valde formosa, indigena, et in honorem Baronis "Castello de Paiva" Lusitanici, ob gratias mihi amicissime oblatas, citata.

Of all the *Coleoptera* enumerated in this Memoir there is none perhaps more interesting than the present one,—not merely as being (with the exception of three *Corynetes*, two of which are evidently naturalized, and the common *Opilus mollis*) the only representative of the *Cleridæ* hitherto detected in any of the Atlantic islands, but likewise as being apparently quite peculiar to the various Euphorbias which constitute such a striking feature in the several portions of the Canarian Group. It is decidedly scarce, and, from its habits, would necessarily escape observation unless searched for in its special localities ; nevertheless when these have been fully explored, it will probably be found to be universally distributed throughout the archipelago. At present, however, it has been observed in only five islands out of the seven,—namely, in Lanzarote (where it was first detected by myself and Mr. Gray, during January, 1858, on the Risco, above the Salinas, in the extreme north), Fuerteventura (near Betancuria, in the Rio Palmas), Grand Canary (between Puerto da Luz and the Isleta), Teneriffe (at Orotava and on the mountains above Santa Cruz) and (by Mr. Gray, near Valverde, of) Hierro. There cannot be the slightest doubt, however, that it must exist equally in Gomera and Palma. I have much pleasure in dedicating it to my worthy friend the Barâo do Castello de Paiva, whose careful researches in Madeira and Portugal have added so much to our knowledge of the entomological fauna of those regions, and who is now engaged in collecting additional material from the Canaries and the Cape de Verdes.

Fam. ANOBIADÆ.

Genus Xyletinus.

Latreille, Cuv. Règne Anim. (ed. 2), iv. 483 (1829).

17. *Xyletinus latitans*,* Woll.

X. rufo-brunneus, crebre et minutissime punctulatus (punctulis oculo valde armato solum observandis) et pube longiusculâ suberectâ flavo-cinereâ tectus; oculis maximis; elytris posterius paulo minus convexis, obsoletissime seriatim subcostatis, ad humeros minus oblique rotundatis; antennis brevibus, testaceis, articulo basilari maximo inflato; pedibus ferrugineis, tibiis subgracilibus.

Long. corp. lin. $1\frac{2}{3}$—$1\frac{3}{4}$.

Xyletinus latitans, Woll., Ann. of Nat. Hist. (Ser. 3), vii. 14 (1861).

Habitat in insulis Lanzarota, Fuerteventura, Teneriffa et Hierro, sub cortice Euphorbiarum arido laxo latitans.

Whether this insect be peculiar to the Euphorbias, I cannot at present undertake to say: nevertheless, since the few specimens which I have detected hitherto were all found beneath the dead outer fibre of those plants, it seems probable that it may undergo its transformations, like so many other species, within the rotting *Euphorbia*-stems. I have taken it in Lanzarote, Fuerteventura, near Orotava and Taganana of Teneriffe, and in the lower district of El Golfo on the west of Hierro.

Fam. TOMICIDÆ.

Genus Apiianarthrum.

Woll., Ins. Mad. 292 (1854).

Some little qualification (though hardly, perhaps, correction) is necessary, of my diagnosis of this genus as given in the "Insecta Maderensia." Its funiculus is there stated, unreservedly, to be 3-articulate,—i. e., to consist of a large basal joint, followed by *two* excessively minute ones between it and the club; and certainly in the exponent (the *A. Euphorbiæ*, from the higher elevations of Madeira) for which the group was established I am still able to detect what I *believe* to be an infinitesimal third joint at the base of the capitulum,—though, from the oblique implantation of the funiculus into the latter, this additional "joint" is only traceable when the antenna is viewed in a particular direction. Still, this third articulation (if such) is so diminutive that I would not be absolutely *certain* that it is more than an apparent one. At any rate this conclusion has been somewhat forced upon me lately through my inability to count more than *two* funiculus-joints in

three of the Canarian species the antennæ of which I have mounted in balsam for the microscope, and which are unquestionably congeneric with the Madeiran one.† So that, all things considered, I think it will be safer to regard the funiculus of *Aphanarthrum* as *bi*-articulate,—with the qualification, however, that in one species, at all events, there are indications, beneath a high microscopic power, of what may possibly be an additional joint at the base of the capitulum. When thus enunciated, the diagnosis will better accord with what is likely to be observed; whilst the fact of an extra articulation being faintly indicated in one of the exponents will leave it an open question whether the funiculus may not in reality be triarticulate,—even though but two joints are distinctly traceable in the various members of the group.

As for the descriptions of nine of the species enumerated below and the diagnostic observations on them, I can scarcely do better than extract them *verbatim* from my Paper "On the *Aphanarthra* of the Canary Islands," published in the March Number of the "Annals of Natural History" for last year; the *A. armatum* is a new species.

18. *Aphanarthrum luridum*,* Woll.

A. lurido-testaceum, pilis longiusculis suberectis sparse vestitum; prothorace sublævi punctulato, antice minus producto nigrescente, lineâ dorsali et stigmate utrinque posito plus minus nigrescentibus; elytris leviter seriatim punctulatis et transversim rugulosis, postice leviter truncatis, plagâ discali nigrescente (in singulo positâ) ornatis.

Long. corp. lin. 1.

Aphanarthrum luridum, Woll., Ann. of Nat. Hist. (Ser. 3), v. 163 (1860).

Habitat in ramis emortuis *Euphorbiæ canariensis* in ins. Teneriffâ et Gomerâ, hinc inde frequens.

In their somewhat larger size, the present species and the fol-

† Feeling it possible, however, that a minute third articulation might become visible under a higher power of the microscope than that which I myself possessed, I transmitted lately these four antennæ to Mr. Waterhouse, for inspection beneath the admirable instrument at the British Museum; and I may add, that his conclusions were precisely the same as my own,—namely, that the funiculus was certainly *biarticulate*, but that in the Madeiran *A. Euphorbiæ* there were obscure indications of what might possibly be an additional (or third) joint, between the second one and the club. In the figure given in the "Insecta Maderensia" this third articulation (if indeed it be a true one) is made much too distinct; nor is there any indication of the funiculus being *obliquely* implanted into the capitulum,—a structure which causes this supposed joint to appear on the surface (i. e. just *within the base*) of the latter.

lowing one differ from the other *Aphanarthra* here described. The *A. luridum* may be known by the pale lurid-testaceous hue of its entire upper-surface, with the exception of a longitudinal dash on each of its elytra, and the dorsal line of its prothorax (together with a spot on either side of the latter, and a suffused portion in front), which are alone more or less dark. Its prothorax is very much less produced over the head than in the other species, its punctuation is extremely fine and minute, and its elytra are perceptibly shortened, or obliquely truncated, at their apex. It appears to be peculiar to the *Euphorbia canariensis*, in the rotten stems of which I have taken it plentifully on the mountains above Santa Cruz of Teneriffe, and on a hill-summit to the north-west of San Sebastian in Gomera.

19. *Aphanarthrum Jubæ*,* Woll.

A. fusco-nigrum, pilis longis subdemissis mollibus dense vestitum; prothorace subrugoso punctato, antice producto sublurido necnon ad apicem ipsum tuberculis duobus prominulis instructo; elytris subseriatim punctatis et transversim rugulosis, testaceis, fasciis duabus profunde dentatis nigris (unâ sc. magnâ in medio duplici et alterâ angustiore subposticâ) ornatis.

Long. corp. lin. 1—1$\frac{1}{8}$.

Aphanarthrum Jubæ, Woll., Ann. of Nat. Hist. (Ser. 3), v. 164 (1860).

Habitat in ins. Lanzarotâ, in ramis dessicatis *Euph. Regis-Jubæ* prope oppidum Haria a meipso A. D. 1859 copiose repertum.

The extremely pubescent surface of this large species, in conjunction with the small but distinct tubercles in the middle of the anterior edge of its prothorax (the two central ones of which are very evident), will, apart from its colouring as defined above, at once characterise it. It was detected by myself, during March of 1859, in great abundance, amongst a pile of dried stems of the *Euph. Regis-Jubæ*, at Haria, in the north of Lanzarote.

20. *Aphanarthrum armatum*,* n. sp.

A. nigro-fuscum, pilis brevibus demissis dense vestitum; prothorace alutaceo et minute punctulato, apice producto acutiusculo vix sublurido et ibidem tuberculis duobus spiniformibus porrectis subapproximatis instructo; elytris dense sed leviter subseriatim punctatis, fasciâ magnâ transversâ testaceâ mox pone basin ornatis; antennis pedibusque infuscato-testaceis.

Long. corp. lin. vix $\frac{3}{4}$.

Habitat Lanzarotam, duobus speciminibus a meipso in trunco Euphorbiæ emortuo deprehensis.

When preparing my Paper on the "*Aphanarthra* of the Canary Islands" I overlooked the present species, having (without accurate examination) regarded the two specimens from which the above diagnosis has been compiled as merely immature ones of the *A. bicinctum*. A more careful inspection of them, however, shows that (amongst other characters) they have the extreme apex of their pronotum (which is not at all thickened or recurved) armed with about four tubercles, of which the inner pair are comparatively elongated, acute, somewhat spiniform, and subapproximated. Indeed in this respect they approach the *A. Jubæ;* nevertheless, apart from the different shape of these minute projections (the inner two of which are *relatively* longer, more porrected, and placed closer together), the *A. armatum* may immediately be known from that insect by its very much smaller size, and by its considerably shorter, finer and more decumbent pubescence; by its alutaceous prothorax (which is rather acuter, and less decidedly diluted, at its extreme apex); by its entire punctuation being closer and less coarse; and by its elytra (so far indeed as I am able to judge from the two examples now before me) being ornamented by merely a large transverse pallid fascia immediately behind their base. It was taken by myself in Lanzarote (I believe in the vicinity of Haria), along with the *A. Jubæ*, *affine* and *bicinctum*.

21. *Aphanarthrum canariense*,* Woll.

A. latiusculum, fusco-nigrum, pilis brevissimis parce vestitum; prothorace subconvexo alutaceo granulato, antice producto lurido necnon ad apicem ipsum acuminato incrassato (fere subrecurvo); elytris dense seriatim punctatis et transversim rugulosis, brunneo-testaceis, fasciâ dentatâ magnâ mediâ nigrâ (plus minus suffusâ) ornatis.

Long. corp. lin. $\frac{3}{4}-\frac{7}{8}$.

Aphanarthrum canariense, Woll., Ann. of Nat. Hist. (Ser. 3), v. 164 (1860).

Habitat in ramis putridis *Euph. canariensis* in ins. Canaria, Teneriffa, Gomera, Palma et Hierro, vulgare.

The just perceptibly broader and shorter outline of this species (in proportion to its size), together with its extremely short pubescence, its dense (but not very coarse) elytral sculpture, and the much acuminated apex of its prothorax, which is very perceptibly thickened (with a slight tendency to be recurved) at its

extreme point, will serve to characterize it. The testaceous portions of its elytra are browner than in the other *Aphanarthra* (except the *A. bicinctum*) here described; the hinder elytral fascia is obsolete, and the anterior one is broad and more or less suffused, and with its central loop continuous and well-defined—not being broken up into two separate portions. It seems principally, if not, indeed, entirely, attached to the decayed stems of the *Euph. canariensis*, under which circumstances I have captured it in Grand Canary, Teneriffe, Gomera, Palma and Hierro.

22. Aphanarthrum bicinctum,* Woll.

A. fusco-nigrum, pilis sat brevibus vestitum; prothorace alutaceo dense granulato, antice producto vix pallidiore; elytris seriatim punctatis et transversim rugulosis, brunneo-testaceis, fasciis duabus dentatis nigris (unâ sc. magnâ et alterâ angustiore subposticâ) ornatis.

Long. corp. lin. $\frac{2}{3}$—$\frac{3}{4}$.

Aphanarthum bicinctum, Woll., Ann. of Nat. Hist. (Ser. 3), v. 165 (1860).

Habitat in ramis emortuis *Euph. balsamiferæ* in ins. Lanzarota et Fuerteventura, vulgare; in Canaria et Teneriffa rarius.

In the *brownish*-testaceous hue of the lighter portions of this insect, and the unbroken form of its front elytral fascia, it agrees with the *A. canariense*. It is, however, much smaller than that species, its pubescence is not quite so short, its hinder elytral fascia is developed, and the apex of its prothorax is usually darker and much less acuminated. Its habits also are different; for whilst that insect is apparently confined (or, at any rate, nearly so) to the *Euph. canariensis*, the *A. bicinctum* is attached principally to the *E. balsamifera* (and I believe, also, though more sparingly, to the *E. Regis-Jubæ*), in the stems of which I have taken it abundantly both in the north of Lanzarote and near the town of Santa Maria Betancuria in Fuerteventura. In Grand Canary it is scarcer, and still more so in Teneriffe.

23. Aphanarthrum bicolor,* Woll.

A. pallido-testaceum, subdiaphanum, pilis paucis erectis remote vestitum; prothorace subtillissime alutaceo sparse et minute punctulato, antice producto necnon ad apicem ipsum acuminato incrassato, lineâ dorsali, maculâ transversâ subposticâ et lineâ transversâ subanticâ (plus minus confluentibus suffusis) nigris; elytris remote seriatim punctulatis (punctulis minutis), fasciis duabus profunde dentatis nigris (unâ sc. magnâ in medio duplici et alterâ angustiore subposticâ) ornatis.

Variat lineis maculisque plus minus fractis, disjunctis, rarius subobsoletis.

Long. corp. lin. $\frac{3}{4}$—1.

Aphanarthrum bicolor, Woll., Ann. of Nat. Hist. (Ser. 3), v. 165 et 362 (1860).

Habitat in ins. Teneriffa, Palma et Hierro, in ramis Euphorbiarum emortuarum (præcipue *E. piscatoriæ*), sat frequens.

A most distinct and beautiful *Aphanarthrum*, readily known by its pale whitish-testaceous hue, diaphanous (or subhyaline), slightly shining, almost unpubescent, and most lightly punctured surface, and by the quantity of dark patches and broken fasciæ with which it is ornamented. It occurs in the dead branches of (I believe principally) the *Euph. piscatoria*, under which circumstances it was taken by myself in Teneriffe and Palma, and by Mr. Gray and myself in Hierro. I have likewise captured it from out of the stems of the same plant in Madeira; where, however, the specimens have their elytra a trifle more distinctly punctured, and the interstices somewhat more roughly alutaceous, or shagreened.

24. *Aphanarthrum affine*,* Woll.

A. angustulum, fusco-nigrum, pilis suberectis sat dense vestitum; prothorace alutaceo punctato granulato, antice producto lurido necnon ad apicem ipsum leviter acuminato incrassato; elytris seriatim punctatis, testaceis, fasciis duabus profunde dentatis nigris (unâ sc. magnâ in medio duplici et alterâ angustiore subposticâ) ornatis.

Long. corp. lin. $\frac{2}{3}$—vix $\frac{1}{3}$.

Aphanarthrum affine, Woll., Ann. of Nat. Hist. (Ser. 3), v. 166 (1860).

Habitat in ramis emortuis Euphorbiarum in ins. Lanzarota, Fuerteventura et Canaria, hinc inde frequens.

This species and the following one are a good deal allied. The *A. affine*, however, is rather larger and a little less densely pubescent, and its elytra are somewhat more parallel and less closely sculptured, the punctures being more evidently arranged in rows than is the case with the *A. piscatorium*. Its elytral fasciæ, also, are much more distinct; and the anterior one is more decidedly double in its central region, like that of the *A. Jubæ, bicolor* and *glabrum*. It was taken abundantly, by Mr. Gray and myself, out of the *Euph. balsamifera*, in the north of Lanzarote, and by myself

at Betancuria in Fuerteventura, as well as (out of the *E. piscatoria*) at El Monte in Grand Canary. It is a good deal allied, in general facies, to the Madeiran *A. Euphorbiæ;* nevertheless it is slightly smaller than that insect, its pubescence is longer, its prothorax less acuminated in front, and its elytral punctures are much larger, fewer, and more evidently disposed in rows.

25. *Aphanarthrum piscatorium*,* Woll.

A. fusco-nigrum, pilis suberectis dense vestitum; prothorace alutaceo dense punctato, antice producto leviter acuminato sublurido; elytris dense subseriatim punctatis et transversim rugulosis, dilute testaceis, fasciis duabus profunde dentatis nigris (unâ sc. magnâ et alterâ angustiore suffusâ posticâ) ornatis.

Long. corp. lin. $\frac{3}{5}$—$\frac{3}{4}$.

Aphanarthrum piscatorium, Woll., Ann. of Nat. Hist. (Ser. 3), v. 166 et 361 (1860).

Habitat in ins. Teneriffa, Palma et Hierro, in ramis *E. piscatoriæ* emortuis, vulgare.

A rather insignificant little species, closely allied to the last one. It may be known from it, however, by its smaller size and somewhat more pubescent surface, by its elytra being just perceptibly less parallel, more densely sculptured, and with their punctures much less evidently disposed in rows, and by its elytral fasciæ (the front one of which is simple, or at any rate less clearly disjointed in the centre) being (especially the hinder one, which is usually continued to the very apex) less distinct. I found it tolerably common, in the decayed stems of the *Euph. piscatoria*, in Teneriffe, Palma and Hierro,—in the last of which islands it was also captured by Mr. Gray. It likewise occurs attached to the same plant, in the lower elevations of Madeira.

26. *Aphanarthrum glabrum*,* Woll.

A. fusco-nigrum, fere pilis carens; prothorace dense alutaceo punctato, antice producto leviter acuminato subincressato (fere bituberculato) sublurido; elytris leviter subseriatim punctatis, testaceis, fasciis duabus profunde dentatis nigris (unâ sc. magnâ in medio duplici et alterâ angustiore subposticâ) ornatis.

Long. corp. lin. $\frac{2}{3}$ — vix $\frac{3}{4}$.

Aphanarthrum glabrum, Woll., Ann. of Nat. Hist. (Ser. 3), v. 167 (1860).

Habitat in ramis truncisque Euphorbiarum in ins. Hierro, rarius.

The almost total freedom from pile (except under a high magnifying power) of this little *Aphanarthrum*, in conjunction with its very lightly sculptured elytra (the punctures of which are but indistinctly disposed in rows), will, *inter alia*, separate it readily from all of the preceding species. It appears to be rare, the only specimens which I have yet seen having been captured by myself in the island of Hierro.

27. *Aphanarthrum pusillum*,* Woll.

A. minutum, nigro-fuscum pilis cinereis vestitum; capite leviter elongato, subporrecto; prothorace angustulo subelliptico punctato, antice leviter producto et subito contracto acuminato; elytris dense subseriatim punctatis, concoloribus, ad humeros in tuberculum indistincte elevatis; antennis pedibusque pallidioribus.

Long. corp. lin. $\frac{1}{2}$ — vix $\frac{2}{3}$.

Aphanarthrum pusillum, Woll., Ann. of Nat. Hist. (Ser. 3), v. 167 (1860).

Habitat in ramis *Euph. canariensis* putridis, in ins. Canaria, Teneriffa et Gomera, a meipso repertum.

The excessively minute size and uniformly dark-brown hue of this little *Aphanarthrum*, in conjunction with its rather elongated subporrected head and its somewhat elliptic, anteriorly contracted prothorax, will at once distinguish it from any of the preceding species. In my notes on the *Aphanarthra*, published in the "Annals of Natural History" for last year, I stated that this diminutive insect might perhaps constitute eventually the type of a new genus; but on mounting lately one of its antennæ in balsam for the microscope, it is constructed on the exact pattern which obtains in the *A. Jubæ* (namely, with certainly *two* funiculus-joints, if indeed there be not in reality, as already intimated, an infinitesimal third one,—such as seems to be faintly indicated in the Madeiran *A. Euphorbiæ*): so that there appears to be no sufficient reason for separating it from the several preceding members of the group. So far as I have observed hitherto, the *A. pusillum* is peculiar to the *Euph. canariensis*, in the rotten stems of which I have captured it (in the great crater of the Bandama) in Grand Canary (on the mountains above Santa Cruz), in Teneriffe, and (on a hill-summit to the north-west of San Sebastian) in Gomera.

Genus Leiparthrum.

Woll., Ins. Mad. 294 (1854).

28. *Leiparthrum curtum*, Woll.

L. brevi-cylindricum, ferrugineum, pilis rigidis cinereis vestitum; prothorace amplo, tuberculis duobus minutis mox infra apicem armato, antice obscuriore; elytris rugulosis, obscure substriato-punctatis; antennis (capitulo obscuriore excepto) tarsisque testaceis.

Long. corp. lin. $\frac{2}{3}$—$\frac{7}{8}$.

Leiparthrum curtum, Woll., Ins. Mad. 298 (1854).

———————— ——, Id., Cat. Mad. Col. 97 (1857.

Habitat in ins. Lanzarota, Fuerteventura, Canaria, Teneriffa, Palma et Hierro, passim.

I have but little hesitation in referring the present insect to the *L. curtum* (a species which was established by myself, in 1854, on a single individual taken near Funchal in 1848); for although the Canarian exponents are somewhat larger than the type from which I drew out my diagnosis, they possess so completely, in all other respects, the characters to which I drew attention, that I cannot but conclude that my original example must have been an accidentally small one,—a supposition which the capture, during my last visit to Madeira, of a series of specimens † corresponding precisely with the Canarian ones would certainly tend to corroborate. It is by no means peculiar to the Euphorbias; nevertheless since it is very frequently to be met with in the dry branches of those plants, it could scarcely be omitted from the present paper. I have taken it in Lanzarote, Fuerteventura, Grand Canary, Teneriffe, Palma and Hierro.

29. *Leiparthrum inarmatum*,* Woll.

L. breviter subovato-cylindricum, fusco-nigrum, pilis rigidis cinereis (præsertim postice) vestitum; prothorace antice subattenuato inarmato (i. e. tuberculis carente); elytris profunde striato-punctatis, interstitiis leviter elevatis, apicem versus plerumque paulo dilutioribus necnon ad apicem subtruncatis; antennis (capitulo vix obscuriore excepto) tarsisque testaceis.

Long. corp. lin. $\frac{2}{3}$—$\frac{3}{4}$.

† These specimens were found boring into an old paling above Porto da Cruz, on the eastern side of the island, during January, 1859. Athough somewhat broader than the *L. bituberculatum*, like their Canarian representatives they are of about the same length as that insect,—ranging from two-thirds to seven eighths of a line.

Leiparthrum inarmatum, Woll., Ann. of Nat. Hist. (Ser. 3) v. 364 (1860).

Habitat in ramulis Euphorbiarum emortuis, in ins. Lanzarotâ, Canariâ, Teneriffâ, et Palmâ parce captum.

The present little *Leiparthrum* is, likewise, found in Madeira,—where it was detected by myself, on the 23rd of December, 1858, in dead branches of the *Euph. piscatoria* between Point Oliveira and the Brazen Head, to the eastward of Funchal. It was from these examples that I draw out my diagnosis of the species in 1860; nevertheless I had previously captured several (during January, March and June of the same year) in Lanzarote, Grand Canary, Teneriffe and Palma. So far as I have observed hitherto, both at Madeira and the Canaries, it is quite peculiar to the wood of the decayed Euphorbias. It may be at once known from the *L. curtum* by its usually darker and less ferruginous hue (it being generally nearly black in front but more piceous posteriorly), by its less parallel outline (the elytra being *slightly* expanded, and obliquely-subtruncated, at their apex,—where moreover they are densely clothed with long and robust pile), by its untubercled prothorax, and by the comparatively large punctures, and raised intestices, of its elytra.

30. *Leiparthrum Lowei*,* n. sp.

L. minutum, breviter cylindricum, nigrum vel fusco-nigrum et pilis rigidis cinereis æqualiter vestitum; prothorace breviusculo, inarmato, postice subsinuato; elytris striato-punctatis, omnino concoloribus, ad apicem integris; antennis pedibusque piceis.

Long. corp. lin. $\frac{1}{2}$.

Habitat Teneriffam, prope oppidum Garachico in caulibus Euphorbiarum emortuis a Revdo. Domo. Lowe nuperrime detectum,—cujus in honorem speciem stabilivi.

This very interesting and minute *Leiparthrum* has just been communicated by the Rev. R. T. Lowe, who detected several specimens of it in dead *Euphorbia*-stems, during April of the present year, near Garachico, in Teneriffe. In its diminutive size it might at first sight be mistaken for a dwarfed state of the *L. inarmatum*, but on closer inspection it is abundantly distinct from that insect. Thus, it is not only smaller than the smallest examples of the *inarmatum*, but it is usually of a blacker (and quite concolorous) hue; it is also of a strictly cylindric outline (being neither widened nor subtruncated posteriorly), with its prothorax

shorter and *sinuated* along its extreme base, and with its elytra (the interstices of which are *not* raised) less deeply punctured, and without any additional setæ at their apex. Its limbs, moreover, are considerably darker than is there the case. Its structural characters are quite those of *Leiparthrum*, the proportions of its 4-jointed tarsi and funiculus being precisely similar to what obtains in the other members of the group. Its front-tibiæ, however, are not entirely unarmed,—there being two short, obtuse teeth on their outer edge. I have much pleasure in dedicating it to its discoverer, whose recent explorations in the Canarian archipelago have added some valuable material to my collection.

Fam. CURCULIONIDÆ.

Genus Phlœophagus.

Schönherr, Gen. et Spec. Curc. iv. 1047 (1838).

31. *Phlœophagus caulium*,* Woll.

P. nigro-piceus; prothorace valde profunde punctato; scutello vix observando; elytris oblongo-ovatis, profunde punctato-striatis, interstitiis vix convexis; pedibus piceis, tibiis subcurvatis, tarsorum articulo tertio distincte dilatato bilobo; antennis piceo-ferrugineis, capitulo ovali.

α. prothorace valde profunde punctato, elytris sat profunde punctato-striatis, interstitiis depressiusculis. [*Ins.* Lanzarota.]

β. prothorace vix densius leviusque punctato, elytris paulo profundius punctato-striatis, interstitiis paulo magis convexis. [*Ins.* Fuerteventura.]

Long. corp. lin. 1½—vix 2.

Phlœophagus caulium, Woll., Trans. Ent. Soc. Lond. (New Series), v. 370 (1861).

Habitat in ins. Lanzarotâ et Fuerteventurâ, caules Euphorbiarum emortuos ubique destruens.

In my Paper on "The Atlantic *Cossonides*," lately published in the "Transactions of the Entomological Society of London," I gave full diagnoses of the various Canarian *Phlœophagi*,—observing that the present species differs from its Atlantic congeners by having, amongst other features, a scarcely visible scutellum: indeed, in the generality of specimens it is quite impossible, even beneath the microscope, to detect the smallest traces of a scutellum; though occasionally one may just be observed, in the form of a minute transverse plate. The *P. caulium* is further remarkable for its excessively deep and coarse sculpture, for its tibiæ

being rather less straightened than is the case in most of its allies, and by the third joint of its feet being very distinctly expanded and bilobed. It abounds in the dead *Euphorbia*-stems of Lanzarote and Fuerteventura, having a just perceptibly different phasis (indicated above) for either island; but I have not yet observed it in any other part of the Canarian archipelago.

Genus Mesites.

Schönherr, Gen. et Spec. Curc. iv. 1043 (1838).

32. *Mesites fusiformis*,* Woll.

M. nigro-piceus, nitidus, depressus, fere calvus; fronte inter oculos profunde foveolatâ; prothorace in disco levissime et parce punctulato, sat obscure carinato necnon postice in medio impresso et ibidem profunde sub-biseriatim punctato; elytris plus minus rufescentioribus, postice attenuatis, profunde punctato-striatis, interstitiis planiusculis, minutissime et parce punctulatis; antennis pedibusque rufescentioribus.

Mas, rostro punctulato, ad antennarum insertionem paulo rotundato-ampliato; prothorace versus latera vix profundius densiusque punctato; femoribus subtus subdentatis.

Fœm., rostro graciliore, tereti, polito, rufo-piceo, ad antennarum insertionem (i. e. mox ante basin ipsam) paulo ampliato; prothorace versus latera multo profundius densiusque punctato; femoribus subtus muticis.

Long. corp. lin. $1\frac{1}{3}$—3.

Mesites fusiformis, Woll., Trans. Ent. Soc. Lond. (New Series), v. 405, pl. 19, f. 7 et 9 (1861).

Habitat insulas Canarienses, in Euphorbiis emortuis ubique vulgaris.

The *M. fusiformis* is a most abundant insect, in the decayed *Euphorbia*-stems, throughout the Canarian archipelago,—Palma being the only island in which, up to the present time, I do not happen to have observed it; though there can be but little doubt, I should imagine, that it must exist there also. Nevertheless it is certainly somewhat remarkable that the few specimens of *Mesites* which I chanced to take in that island from out of the decayed Euphorbias should have belonged to another, but closely allied, species. Full observations on its diagnostic characters are given in my memoir on the "Atlantic *Cossonides*" above referred to.

*33. Mesites pubipennis,** Woll.

M. præcedenti similis, sed lurido-pubescens, prothorace (præsertim in sexu fœmineo) densius rugosiusque punctato, elytrorum interstitiis convexioribus et magis distincte punctulatis, necnon striis latioribus et magis profundis.

Long. corp. lin. $1\frac{2}{3}$—$2\frac{1}{2}$.

Mesites pubipennis, Woll., Trans. Ent. Soc. Lond. (New Series), v. 406 (1861).

Habitat Palmam, in Euphorbiis supra Sanctam Crucem crescentibus parce repertus.

As already stated, the few specimens which I have yet seen of this *Mesites* were captured by Mr. Gray and myself in Palma (about two miles up the Barranco de Santa Cruz),—where the species may perhaps represent the *M. fusiformis*, which is so abundant throughout the remainder of the archipelago. At the same time, however, I cannot conceive it probable that so common an insect as the *M. fusiformis* should be absent from Palma,—our visit to that island having been somewhat too late in the season for the generality of the *Euphorbia*-infesting *Coleoptera*. The *M. pubipennis* differs from its ally in being clothed (particularly on the elytra) with a lurid pubescence, by its prothorax (especially of the female sex) being more densely and coarsely punctured, as well as by its elytra having their interstices convexer and more evidently punctulated, and their striæ both broader and deeper.

Fam. LAMIADÆ.

(Sub-fam. DORCADIONIDES.)

Genus Leprosoma.

(Dej. Cat.) Thomson, Essai d'une Classif. de la Céramb. 23 (1860).

The remarkable insect for which the present genus was proposed in Dejean's Catalogue, and which has lately been characterized by M. Thomson, is unquestionably the *Lamia gibba* of Brullé,—described and figured in Webb and Berthelot's "Histoire Naturelle des Iles Canaries," in 1838. It is very closely related to my genus *Deucalion* (particularly, however, to the *D. oceanicus* from the Salvages, rather than to the *D. Desertarum*); but I am assured by M. Thomson that it cannot be actually admitted into that group. In the Zoological Gallery at the Jardin des Plantes, where I have lately inspected the original type, it stands under the generic name of *Brullaria;* but as no such

genus has yet been published, it must necessarily (if it cannot be amalgamated with *Deucalion*) be cited as *Leprosoma*.

*34. Leprosoma gibbum,** Brullé.

L. elongato-ovatum, crassum, convexum, densissime cinereo- et fusco-pubescens; prothorace remote et dense punctato, tuberculis quinque in disco necnon ad latera spinâ mediâ maximâ armato; elytris remote punctato-tuberculatis, fasciâ postmediâ dentatâ obsoletâ fusco-ornatis, singulo costis duabus plus minus distinctis (et tertiâ obsoletissimâ) notato necnon ad apicem ipsum excavato, dentes duos in singulo positos efformante.

Long. corp. lin. 7—8.

Leprosoma asperatum, Dej. Cat. 372 (1837).

Lamia gibba, Brullé, Webb et Berth. Hist. Nat. des Can. (Col.), 62, pl. 1, fig. 5 (1838).

Leprosoma asperatum, Thoms., Essai d'une Class. de la Céramb. 23 (1860).

Habitat truncos Euphorbiarum emortuos, in locis subeditioribus Fuerteventuræ et Teneriffæ a meipso lectum.

The *L. gibbum* is probably far from scarce if searched for in its proper localities; but as it is apparently peculiar to the rotten *Euphorbia*-stems, it might (like most of the species enumerated in this Memoir) be easily overlooked by a casual collector in the island, who might have but little time for observation, and would not be aware of the interesting fauna nourished by that singular race of plants. I have seen the larvæ, however, of this fine Longicorn in considerable profusion, and have taken the perfect insect not uncommonly, on the mountains above Santa Cruz of Teneriffe (in the direction of Las Mercedes), as well as near Betancuria (in the Rio Palmas) of Fuerteventura. It secretes itself beneath the loose outer fibre, generally of the larger trunks, and makes a loud stridulation when captured, like the species of *Deucalion*, by the upward and downward movement of its head and prothorax,—an operation which causes the inner surface of the pronotum to slide over the dorsal file with which its mesonotum is furnished.

(Sub-fam. SAPERDIDES.)

Genus Blabinotus.

Woll., Ins. Mad. 426, pl. ix. fig. 1 (1854).

The present genus, I am informed by M. Thomson, is identical with *Stenidea* of Mulsant and *Deroplia* of Dejean's Catalogue;

but since the name of *Stenidea* had already been preoccupied and that of *Deroplia* is unpublished, it follows that *Blabinotus* is the title by which it must be quoted. Concerning its affinities, M. Thomson writes: "It belongs, in my opinion, to the *Saperditæ*, near to *Hebestola* of Blanchard; some Hebestolas have the prothorax armed, like *Blabinotus*." Nearly all the Longicorns which I would regard as unquestionably indigenous to the Atlantic islands are members of this particular group. It was enunciated by myself in 1854, for the reception of an insect (the *B. spinicollis*) found in the laurel-woods of Madeira, and which I subsequently captured at the Canaries also,—in the laurel-regions of Palma and Teneriffe. In 1856 another exponent was added by Mr. Bewicke,—discovered beneath the bark of pine-trees at the Palmeira, above Funchal; which species I described, in 1857, under the name of *B. Bewickii*. In January, 1858, a third representative (the *B. pilosus*, characterized below) was detected by Mr. Gray, during our residence in the north of Lanzarote,—a locality in which I afterwards met with two specimens of it myself. In February of the same year, whilst visiting the island of Hierro in Mr. Gray's yacht, the "Miranda," I brushed a fourth (the *B. Hesperus*,—as yet unpublished) from off a large bushy *Rumex* on the ascent from Port Hierro to Valverde. And in the following June, whilst breaking open a rotten cone of the *Pinus canariensis* in the island of Palma, I brought to light a fifth,—closely related to (but quite distinct from) the Madeiran *B. Bewickii*; whilst the two insects recorded by Brullé as *Cerambices*, and re-characterized in this Paper, will raise the number of *Blabinoti* hitherto observed in the Atlantic Groups to no less than seven. Thus, whilst the three here enumerated would appear to be peculiar to the Euphorbias, two, on the other hand, are attached to the pines, and one no less exclusively to the laurels. As for the unique specimen from Hierro, of the *B. Hesperus*, though taken from off a *Rumex*, I am scarcely in a position to draw any conclusion respecting its mode of life.

35. *Blabinotus annulicornis*,* Brullé.

B. cylindricus, rufo-piceus, pilis demissis flavo-albidis densissime tectus et longioribus suberectis paucis obsitus; capite postice læte variegato; prothorace in dorso late pallido, ad latera nigrescenti et spinâ mediâ magnâ armato, antice et

postice subæqualiter constricto; elytris lineis plus minus fractis nigrescentibus longitudinaliter ornatis; antennis pedibusque annulato-variegatis.

Long. corp. lin. $4\frac{1}{2}$—$7\frac{1}{2}$.

Cerambyx annulicornis, Brullé, Webb et Berth., Hist. Nat. des Iles Can. (Col.) 62, pl. 1, fig. 3 (1838).

Habitat Euphorbias emortuas, in ins. Teneriffa et Hierro haud infrequens.

The present species and the following one are very nearly allied, both in size and external contour; nevertheless the *B. annulicornis* may be known from the *albidus* by the much yellower hue of its (denser) pubescence, by its head being more brightly variegated, and its pronotum broadly pale down the centre,—the sides being dark. Its elytra, also, have a much less tendency for the small, rounded, paler spots which are generally pretty evident in that insect; whilst, on the other hand, the darker longitudinal lines are somewhat more evident, and usually less broken. Its surface, likewise, beneath the pile, is more *rufo*-piceous; and its lateral prothoracic spine, although large, is rather less powerfully developed. The two species, however, are so nearly akin, that had one but single specimens to judge from they might have been almost regarded as phases of each other; nevertheless out of fifty-six examples in my possession (twenty of which belong to the *B. annulicornis* and thirty-six to the *albidus*) there is certainly nothing at all connective between the two. I may add that, during a late visit to Paris, I compared these insects with M. Brullé's original types at the Jardin des Plantes, and am quite certain therefore of the correctness of my identification of them. The *B. annulicornis* appears to be more abundant in the western islands than in the eastern ones, of the Canarian Group. At any rate I have not observed it hitherto in Lanzarote, Fuerteventura and Grand Canary; but have captured it (not uncommonly) out of the dried *Euphorbia*-stems on the mountains above Santa Cruz of Teneriffe, as well as in the lower regions of El Golfo on the west of Hierro.

36. *Blabinotus albidus*,* Brullé.

B. cylindricus, piceus, pilis demissis albidis dense nebulosus et longioribus suberectis obsitus; prothorace ad latera spinâ mediâ maximâ armato, antice et postice subæqualiter constricto; elytris punctulis albidis plus minus distinctis irroratis

et lineis fractis nigrescentibus obscuris longitudinaliter ornatis; antennis pedibusque annulato-variegatis.

Long. corp. lin. 4½—8.

Cerambyx albidus, Brullé, Webb et Berth., Hist. Nat. des Iles Can. (Col.), 62, pl. 1, fig. 4 (1838).

Habitat in ins. Lanzarota, Fuerteventura et Teneriffa, Euphorbias emortuas destruens.

The distinctions between the present species and the last one have already been pointed out,—the whiter and less dense pubescence of the *B. albidus*, in conjunction with its almost concolorous pronotum, its still more powerfully developed prothoracic spine, its less evident and more broken elytral lines, and its usually more perceptible (and paler) elytral spots, being at once sufficient to separate it from the *B. annulicornis*. Its long, suberect additional hairs, also, are for the most part even less numerous than is the case in that insect. I have taken it, from beneath the loose outer-fibre of dead *Euphorbia*-stems, in Lanzarote and Fuerteventura; as also at Taganana, and on the mountains above Santa Cruz of Teneriffe.

37. *Blabinotus pilosus*,* n. sp.

B. angusto-subcylindricus (apice vix attenuatus), piceus, pilis demissis subflavo-albidis densissime tectus et longioribus suberectis sat dense obsitus; prothorace ad latera spinâ mediâ brevi anguliformi armato, postice magis quam antice constricto; elytris lineis fractis nigrescentibus obscuris longitudinaliter ornatis; antennis pedibusque annulato-variegatis.

Long. corp. lin. 4—6.

Habitat in Lanzarotâ, rarissimus: primus detexit Dom. Gray.

The narrower outline of the *B. pilosus* (the elytra of which are but slightly wider than the hinder region of the prothorax), in conjunction with its much shorter, and almost anguliform, prothoracic spine, and the comparatively broader anterior portion of its prothorax (which is much less constricted than the hinder half), and its denser suberect additional pile, will readily separate it from both of the preceding species. It is apparently very rare, and was first detected by John Gray, Esq., near Haria, in the north of Lanzarote, during our sojourn there in January, 1858; in which same locality I subsequently captured two specimens myself, during January of the following year.

Fam. HALTICIDÆ.

Genus Haltica.

Geoffroy, Hist. Abr. des Ins. de Paris, i. 244 (1762).

38. *Haltica Paivana*,* Woll.

H. ovato-oblonga, nitida, profunde dense et rugose punctata, læte metallica (modo cyanea, modo viridi-cyanea, modo æneo-cuprea); prothorace transverso-subquadrato, ad latera marginato subrotundato, angulis ipsis posticis leviter prominulis acutiusculis; antennarum basi pedibusque rufo-testaceis, antennis versus apicem, femoribus anterioribus ad basin, femoribus posticis omnino, necnon tarsorum apicibus plus minus nigrescentibus.

Mas vix minor, oculis magis prominulis tarsorumque anteriorum articulo basilari paulo dilatato.

Variat (æneo-cuprea) pedibus in utroque sexu omnino pallidis.

Long. corp. lin. 1—1½.

Haltica Paivana, Woll., Journ. of Ent. i. 2 (1860).

Habitat in ins. Lanzarota, Canaria, Teneriffa et Hierro, folia Euphorbiarum destruens.

The present insect is the only one included in this memoir which is attached to the *foliage* of the Euphorbias, all the others being found strictly within the rotten stems; and indeed I should not have admitted the *H. Paivana* into it, were it not apparently quite peculiar to those singular plants. I need scarcely add, that *numerous* flower-resorting *Coleoptera* (such as *Anaspis*, *Dasytes* and *Attalus*) may be found accidentally on the Euphorbias; but such are mere chance visitors, and have no more connection with the plants than with any other members of the Canarian flora: but since the present *Haltica* is purely of "*Euphorbia*-infesting habits," I cannot properly omit it from the Paper. It is, as I stated in my enumeration of the *Halticidæ* of these islands published in the first number of the "Journal of Entomology," "a metallic species of very variable colour, shading-off from bright cyaneous-blue into golden-green, and almost, at times, into coppery-brown." It was taken by Mr. Gray and myself, during January, 1858, in the north of Lanzarote (in which locality I again captured it, after a year's interval); as also, by myself, in Grand Canary (on the mountains above San Martao), Teneriffe (near Laguna, Orotava and Santa Cruz), and (in the district of El Golfo) on the west of Hierro.

Fam. ULOMIDÆ.

Genus Hypophlœus.

Fabricius, Scrivt. af Natur. Selsk. (1790).

39. *Hypophlœus Euphorbiæ*,* n. sp.

H. lineari-elongatus, rufo-ferrugineus, subnitidus; capite prothoraceque dense punctatis, hoc elongato-subquadrato; elytris paulo pallidioribus, subfusiformibus basi truncatis, levissime punctato-striatis, interstitiis minutissime uniseriatim punctulatis; pedibus rufo-testaceis.

Long. corp. lin. 1—1¼.

Habitat ins. Lanzarota, Canaria, Teneriffa et Hierro, sub cortice Euphorbiarum emortuo, rarius.

The present *Hypophlœus* appears to be quite peculiar, so far as I have observed hitherto, to the dead stems of the various Euphorbias,—beneath the loose outer bark of which I have captured it in the north of Lanzarote, as also in Grand Canary, on the mountains above Santa Cruz of Teneriffe, and in the district of El Golfo on the west of Hierro. It is allied to the Madeiran *H. ambiguus*, which in all probability will be found to possess similar habits. Indeed, having no longer a type of that insect in my collection, I had supposed that it might possibly be identical with it; but having forwarded lately an example of the Canarian species to Mr. Waterhouse, for comparison with the original Madeiran one (now in the British Museum), I have received from him the following observations: "The two insects are certainly quite distinct: in the head there is very little difference, though the punctuation is a trifle finer and a little more dense, and the reflected fore-part is somewhat *less* reflected, in the Teneriffe species than in that from Madeira; but in the antennæ there is a marked discrepancy,—those of the Canarian one being relatively larger and more elongated. The prothorax in the *H. ambiguus* is quadrate, or even slightly transverse; whereas in the other it is rather longer than broad: the punctures, too, of the latter are perceptibly finer and more dense. The elytra are *distinctly* punctate-striated in the Madeiran insect (the punctures of the striæ being much larger than those of the interstices), whereas in its ally they are very faintly so; and, moreover, the Canarian species has its elytra and legs decidedly longer than is the case in the Madeiran one."

Fam. ŒDEMERIDÆ.

Genus Ditylus.

Schmidt, in Linn. Ent. i. 87 (1846).

40. *Ditylus concolor*, Brullé.

D. elongato-cylindricus, læte fulvo-testaceus (oculis tibiarumque calcariis solis nigris), crebre punctatus, densissime et breviter pubescens; prothorace paulo inæquali, subcordato; elytris obsoletissime longitudinaliter subcostatis; antennis apicem versus tarsisque vix obscurioribus.

Long. corp. lin. $4\frac{1}{3}$—$7\frac{1}{3}$.

Ditylus concolor, Brullé, Webb et Berth. Hist. Nat. des Iles Can. (Col.) 70, pl. 1, fig. 13 (1838).

Habitat in ins. Canariâ, Teneriffâ et Palmâ, minus frequens.

The beautiful *D. concolor*, so remarkable for its large (though most variable) stature and its pale golden-testaceous hue, is widely distributed throughout the Canarian archipelago—though everywhere sparingly. It is by no means peculiar to the Euphorbias (at any rate in its imago-state); nevertheless I have taken it from beneath the loose outer bark of those plants on the mountains (towards Las Mercedes) above Santa Cruz of Teneriffe, as also below Taganana, and in the rocky *Euphorbia*-covered ground between the Puerto and Orotava. In Grand Canary it was found in comparative abundance by the Rev. R. T. Lowe, during our short stay at Arguineguin, in the south of the island; and I have likewise captured it near the mouth of the Barranco de Nogales, on the east of Palma.

Fam. STAPHYLINIDÆ.

(Sub-family ALEOCHARIDES.)

Genus Homalota.

Mannerheim, Brachel. 73 (1831).

41. *Homalota canariensis*,* n. sp. (Pl. VII. fig. 8.)

H. angusto-linearis, nigra, alutacea, subnitida, minute et parce punctulata, longe pubescens; fronte depressâ, oculis prominentibus; prothorace nigro-fusco, subquadrato, angulis posticis subrectis, carinato; elytris fusco-testaceis, ad latera plus minus anguste sed diffuse nigrescentibus; abdomine nitido, basi constricto dilutiore; antennis brevibus, crassis,

nigro-fuscis, basin versus testaceis, articulo primo magno, ultimo breviusculo; pedibus gracilibus, pallido-testaceis.

Long. corp. lin. $1\frac{1}{4}$—$1\frac{1}{2}$.

Habitat in truncis *Euphorbiæ canariensis* putridis, in Teneriffâ et Gomerâ lecta.

The narrow outline, coarsely alutaceous surface and basally-constricted abdomen of this very distinct *Homalota*, in conjunction with its depressed forehead, subquadrate prothorax and abbreviated antennæ (the first joint of which is greatly enlarged, and the apical one short), will, apart from its numerous other peculiarities, at once characterise it. It appears to be exclusively attached to the damp, putrid stems of the rotten Euphorbias; and I have hitherto only observed it in those of the *E. canariensis*—under which circumstances I took it abundantly in Gomera, during February, 1858, on a hill-top to the north of San Sebastian; and in February of the following year, in similar positions, on the mountains above Santa Cruz of Teneriffe.

42. *Homalota putrescens*, n. sp.

H. sublinearis, nigra, nitida, minute punctulata, longe pubescens; fronte subconvexâ; prothorace vix dilutiore, transverso, lato, postice rotundato, subconvexo, vix carinato; elytris fusco-testaceis, versus angulos posticos externos plus minus late et diffuse nigrescentibus; abdomine sublineari; antennis longiusculis, crassis, nigro-fuscis, ad basin testaceis, articulo ultimo longiusculo; pedibus longiusculis, pallido-testaceis.

Long. corp. lin. $1\frac{1}{4}$—$1\frac{1}{2}$.

Habitat in ins. Gomerâ, in truncis *Euph. canariensis* putridis unà cum *H. canariensi* a meipso reperta.

Readily known from the *H. canariensis* by its broader outline, convexer head and more transverse prothorax (which is rounded posteriorly, instead of having the angles well defined), as also by its concolorous and sublinear abdomen, and its somewhat brighter and less alutaceous surface. Its eyes, also, are less prominent, and its antennæ longer,—their basal joint, moreover, being less inflated, and their apical one not so short. It is far more nearly allied, however, to the *H. cacti*, from which it simply differs in its wider and more posteriorly-rounded prothorax and rather longer antennæ; whilst from the *H. coriaria* it may be known by the much paler hue of its somewhat more ample elytra, by the punctuation of its head being slightly less dense, by its pubescence being considerably coarser, and by its limbs being altogether

rather more elongated. The only examples which have come under my observation were captured by myself, in company with the *H. canariensis*, from out of the putrid stems of the *Euph. canariensis*, during February, 1858, on the hills to the north of San Sebastian in Gomera.

43. *Homalota cacti*, n. sp.

H. omnino ut in *H. putrescens*, sed prothorace paulo angustiore, postice vix minus rotundato, necnon antennis paulo brevioribus.

Long. corp. lin. $1\frac{1}{4}$.

Habitat ins. Teneriffam et Palmam, in illâ in truncis *Euph. canariensis* putridis in montibus supra Sanctam Crucem, sed in hac in foliis *Cacti opuntiæ* marcidis deprehensa.

The present *Homalota* is very closely related to the last one—with which, indeed, unless the specimens be in good condition and with their limbs properly set-out, it may be easily confounded. Nevertheless, a close inspection will sufficiently bring to light its true characters—which consist, however, merely in its narrower prothorax (which is not quite so wide as the elytra, and rather less regularly rounded behind, than is the case in the *H. putrescens*), and in its antennæ being just perceptibly darker and shorter. So far as I have observed hitherto, it would seem, in its habits, to be more partial to the rotting, sodden leaves of the *Cactus opuntia* than to the stems of the Euphorbias; nevertheless, since I have taken it from out of the *E. canariensis*, on the mountains above Santa Cruz of Teneriffe, it ought scarcely, perhaps, to be omitted from this Paper. In the putrid leaves, however, of the prickly-pear it is at times far more abundant—under which circumstances I have observed it in considerable profusion in the Banda of Palma, during my residence there with the Rev. R. T. Lowe at the beginning of June, 1858.

44. *Homalota coriaria*, Kraatz.

H. sublinearis, nigra, nitida, minutissime punctulata, breviter pubescens; prothorace vix dilutiore, transverso, breviusculo, foveâ mediâ abbreviatâ plus minus obscurâ impresso; elytris fusco-piceis, versus angulos posticos externos vix obscurioribus; antennis breviusculis, crassiusculis, ad basin piceis; pedibus dilute testaceis.

Long. corp. lin. 1—$1\frac{1}{4}$.

Homalota coriaria (Miller), Kraatz, Nat. der Ins. Deutsch. ii. 282 (1856).

——— ———, Woll., Cat. Mad. Col. 177 (1857).

Habitat in ins. Lanzarotâ, Canariâ, Teneriffâ, Gomerâ et Palmâ, hinc inde vulgaris.

The *H. coriaria* may be known from the two preceding species, to which it is somewhat allied, by, *inter alia*, its rather smaller size, very much shorter pubescence, more delicate punctuation, and by the darker hue of its elytra. Its prothorax, also, has a greater or less tendency for a wide but shallow depression in the centre behind; and its antennæ are but obscurely diluted at their base. Although frequently found in the damp, rotting *Euphorbia*-stems, it is by no means peculiar to them—occurring equally almost everywhere, under decaying vegetable refuse. I have taken it in Lanzarote, Grand Canary, Teneriffe, Gomera and Palma; and it is, also, an abundant insect in Madeira.

45. *Homalota vagepunctata*, n. sp.

H. sublinearis, nigra, nitidissima, parcissime punctata, longe sed parce pubescens; capite parvo, subrotundato; prothorace elytrisque fuscis, convexis, illo transverso postice rotundato haud carinato; antennis gracilibus, nigro-fuscis ad basin dilutioribus; pedibus gracilibus, dilute testaceis.

Long. corp. lin. 1—1¼.

Habitat Lanzarotam et Fuerteventuram, inter Euphorbias haud infrequens.

The shining and very remotely punctured surface of the present *Homalota*, in conjunction with its small, rounded head and slender antennæ, its coarse but distant pubescence, and its convex, dark-brown prothorax and elytra, will at once characterise it. In its general contour and aspect it is somewhat allied to the *H. clientula* and *fungi* of more northern latitudes, though totally distinct from them. It is not uncommon amongst the Euphorbias (occasionally to be found even on their *flowers*) in the north of Lanzarote; and I have also captured it, though more sparingly, in Fuerteventura.

(Sub-fam. STAPHYLINIDES.)

Genus Xantholinus.

Dahl, Encyclop. Method. x. 475 (1825).

§ III. (operis Erichsoniani.) "*Thorax punctorum seriebus dorsalibus rectis lateralibusque lituis impressus*" (p. 319).

46. *Xantholinus marginalis*,* n. sp.

X. niger, nitidus; capite convexo, basi truncato, sat dense

punctato et punctulis minutissimis intermediis obsito; prothorace seriebus dorsalibus 8—10-punctatis, margine postico late et laterali angustissime dilutiore; elytris læte rufo-testaceis, vix subseriatim sat dense punctatis; abdomine, præsertim versus apicem, dilutiore; antennis rufo-fuscis; pedibus testaceo-rufis.

Long. corp. lin. 3—$3\frac{2}{3}$.

Habitat Lanzarotam et Fuerteventuram (aut saltem ins. parvam propinquam "Lobos" dictam), in caulibus Euphorbiarum putridis degens.

The present *Xantholinus* has much the colouring and general aspect of the common European *X. glabratus;* but is smaller than that insect, with its head and prothoracic series much more densely punctured, with the margin (particularly the hinder one) of its pronotum diluted in hue, and with its elytra, abdomen and legs respectively paler. It is very rare, and (so far as I have observed hitherto) quite peculiar to the damp, rotting *Euphorbia*-stems—in which positions it was taken by Mr. Gray and myself on the Risco at the north of Lanzarote, during January, 1858; as well as, by myself, on the 28th of March of the following year, in the little island of Lobos, off the extreme north of Fuerteventura.

(Sub-fam. PÆDERIDES.)

Genus Dolicaon.

Laporte, Etud. Ent. i. 119 (1834).

47. *Dolicaon nigricollis*, n. sp.

D. apterus, subcylindricus, niger, nitidus; capite prothoraceque sat parce punctatis; elytris, abdominis segmentis ultimis duobus antennisque testaceo-rufis; palpis pedibusque rufo-testaceis.

Mas, abdominis segmento sexto infra profunde inciso, quinto integro.

Var. β [an species distincta?] palporum maxillarium articulo tertio vix minus incrassato, antennis versus basin vix gracilioribus, capite vix breviore, postice paulo magis rotundato.

Long. corp. lin. $2\frac{2}{3}$—$3\frac{1}{3}$.

Habitat Lanzarotam, in truncis Euphorbiarum putridis necnon sub lapidibus haud infrequens: *var.* β (adhuc unica) ad Canariam solam pertinet. Species *D. Illyrico* affinis et fortasse vix distincta, sed capite prothoraceque paulo subtilius punctatis antennisque paulo brevioribus ab illo differt.

The present *Dolycaon* appears to be very closely allied to the *D. Illyricus*—with which, indeed, judging from the diagnosis, I should have united it, had I not been informed by Dr. Kraatz that its head and prothorax are somewhat more lightly punctured, and its antennæ a little shorter, than is the case in that species. It is not impossible, therefore, that it may be but a geographical phasis of the *D. Illyricus;* though, as I have no type of the latter for comparison, I will not venture to record it absolutely as such. It is not uncommon in the island of Lanzarote, and is by no means peculiar to the decayed *Euphorbia*-stems; though since it is very frequently to be found in such positions, I have no option but to include it in the present Paper. Indeed it *more* often, perhaps, occurs beneath stones than elsewhere—particularly when the earth is moist after the winter rains. Of the "*var.* β" I have taken but a single specimen, and that in the region of El Monte of Grand Canary. It is just possible that it may be specifically distinct; nevertheless, since its differential characters are so slight, I have thought it scarcely safe to regard it as such on the evidence afforded by a solitary example.

48. *Dolicaon ruficollis*, n. sp.

D. apterus, subcylindricus, niger, nitidus; capite prothoraceque sat parce punctatis; hoc, elytris, abdominis segmentis ultimis duobus antennisque testaceo-rufis; palpis pedibusque rufo-testaceis.

Long. corp. lin. $3\frac{2}{3}$.

Habitat Fuerteventuram (et ins. parvam propinquam "Lobos" dictam), in truncis Euphorbiarum necnon sub lapidibus, rarissimus. Species staturâ omnino præcedentis, sed paulo major prothoraceque testaceo-rufo (haud nigro).

The *D. ruficollis* differs from the preceding species mainly in being somewhat larger, and in having its prothorax pale-rufous (i. e., concolorous with the elytra), instead of black. Other minute characters are just perceptible, but are more easily seen than described. The only two specimens which have come under my observation were captured by myself—one in the east of Fuerteventura, during January, 1858; and the other within a rotten *Euphorbia*-stem on the little island of Lobos, in the Bocayna Strait, on the 28th of March, 1859. Its habits, therefore, would appear to be the same as those of its ally.

XI. *On the* Ptinidæ *of the Canary Islands.* By T. Vernon Wollaston, Esq., M.A., F.L.S.

[Read 3rd June, 1861.]

Having lately been examining, with considerable care, the various representatives of the *Ptinidæ* which have been detected, up to the present date, in the islands of the Canarian archipelago, I propose in this Memoir, first, to describe them, and, secondly, to offer a few observations on the structural peculiarities of the Family.

In glancing at the numerous published diagnoses of this interesting group, it appears to me that the greatest misapprehension has usually prevailed concerning the exact form of the oral organs of its several members. The details given in the twelfth volume of Sturm's "Deutschlands Fauna" are simply ridiculous, having (so far as I can detect) scarcely any foundation in fact. Thus, the upper-lip is drawn semicircular (instead of quadrate, and a little excavated at its tip); the maxillæ are represented as having but a single lobe (instead of two); the ligula, which in the *Ptinidæ* is always long and with the palpi inserted near its apex, is made remarkably short, and with the palpi arising from its base (close to the anterior angles of a *transverse* mentum!); the enormous central-process which constitutes in reality almost the whole mentum is entirely omitted; and no notice whatsoever is taken of the great length, slenderness and arcuation which form such a marked feature in the basal joint of the maxillary and labial palpi of all the exponents of the Family.

But if thus misrepresented in the "Deutschlands Fauna," we should at least expect that the structural details would be minutely examined, and all doubts critically cleared-up, in any work whose sole object it was to monograph so small a group; and accordingly we turn to M. De Boieldieu's treatise, in the "Annales de la Soc. Ent. de France," for information. But even there also (despite the beautiful illustrations of the various *species*) we are doomed to disappointment,—for not only are the generic diagnoses brief to a degree, and imperfect, ut (though less so than Sturm's) absolutely incorrect. Thus, for instance, he goes nominally through the structural formula both of *Hedobia* and *Ptinus* without so much as alluding to the great corneous process

of the mentum ;* but, as though finding it out for (apparently) the first time whilst enunciating *Niptus*, he makes the observation in a foot-note, "Cette *dent* existant dans tous les Ptiniores, je n'en ai pas fait mention dans les genres précédents"! And, furthermore, (with respect to *Niptus*), although the genus appears to possess sufficient characters in the shape of its eyes, femora, and the under-parts of its body, he does not even refer to them, but founds his diagnosis on two or three imaginary differences (for, according to the dissections now before me, they are strictly "imaginary") in the details of its mouth. Then, in *Trigonogenius* M. De Boieldieu gives scarcely any characters at all, and speaks of the mentum as "carré, comme dans tous les Ptiniores;" but certainly he must have been aware (since it appears he had undoubtedly seen the menta of, at any rate, *Niptus* and *Gibbium*) that the shape of that organ would be better expressed by almost any term that could be selected than *square*. Besides, the only real peculiarities of the group—namely, the obsolete scutellum, the excessive shortness of the penultimate abdominal segment, the very distant posterior coxæ, and the form and brevity of the metasternum—are not so much as glanced at! Of the cosmopolitan *Mezium* there is no generic formula added of any kind, the author stating that he was unable to procure a specimen for dissection! Whilst in his figured details of *Gibbium* he is entirely wrong: for not only has he made the inner lobe of the maxillæ *much* too abbreviated, and the apex of the mentum too acute; but he has, likewise, drawn the basal joint of the labial palpi *straight* and *short* (instead of long and curved); and (as is equally the case in *Niptus*) he has entirely omitted the singularly-produced shoulder of the maxillary *stipes* which projects outward (in *all* the members of the *Ptinidæ*) into an elongated process immediately below the insertion of the palpus. This last feature, which is a very important one, he has not alluded to in *any* of the genera.

But, having thus criticized the structural details given by others,† let us see what the characters of the group really are.

* Even Prof. Lacordaire, in his admirable "Genera des Coléoptères," omits all notice of this process, speaking of the mentum as "transversal, légèrement échancré, ses angles antérieurs plus ou moins aigus."

† Since finishing the present Paper I have received the Part of the "Genera des Coléopt. d'Europe," in which M. Jacq. Duval has treated the *Ptinidæ*, and I am bound to add, that his details are on the whole remarkably accurate and satisfactory. I think, however, he does not give sufficient prominence to certain peculiarities,—as, for instance, the arcuation of the basal joint of the *labial* palpi (which is no straighter than is the case in the maxillary pair), the elongated

We will take the organs *seriatim*.* Although more or less pilose at its apex, the shape of the upper-lip is *almost* invariable,—being nearly square, a little excavated at the tip, and with its anterior angles slightly rounded.† The mandibles are shortly-acute (and simple) at their extreme apex, and from thence oblique to nearly the middle of their inner edge,—where the sudden turn which the direction of the latter takes, from thence to the base, occasions the shaping-out of a blunt central angle, or tooth. This structure is, also, nearly invariable,—the slightly obtuser mandibles of *Piarus*, and the still *more* obtuse ones of *Casapus* being the only exceptions to it (and even those merely in degree) with which I am acquainted. The maxillæ are always bilobed ; the outer-lobe being small and narrow, and the inner one rather shorter and broad, and both of them densely pubescent. A curious feature, however, exists in the *stipes* of the maxillæ, which is produced outwards into an elongated, more or less blunt, shoulder-like process (usually furnished with a few enormously long hairs) immediately below the insertion of the palpus. Both the maxillary and labial palpi are remarkable for the comparative great length, slenderness and curviture of their first articulation (a peculiarity which attaches to *every* member of the family which I have dissected); whilst the terminal one is somewhat elongate-fusiform, being truncated at its base and acuminated at its apex. This latter character is likewise universal in all the *Ptinidæ* which I have yet examined, except in the Canarian genera *Casapus* and *Dignomus*,—both of which have the ultimate joint of their *labial* palpi anomalously scooped-out at its tip. Then comes the mentum, which is perhaps the most curious, no less than the most constant, of the parts of the mouth. By far its larger portion,

shoulder-like process of the *stipes* of the maxillæ, and the excessive shortness in some genera of the penultimate segment of the abdomen. He is scarcely correct, too, in calling the ligula "petite;" for it is decidedly elongate (though narrow),—as indeed is evident from the fact that it projects considerably beyond the enormous central-process of the mentum. When detached from the latter, its length is seen to be very considerable.

* I may mention here, that the species which I have dissected (some of them twice over) are the twelve following: *Casapus Bonvouloirii* and *subcalvus*, *Dignomus gracilipes*, *Ptinus* 6-*punctatus*, *Niptus hololeucus*, *Mezium sulcatum*, *Gibbium scotias*, *Nitpus gonospermi*, *Sphæricus albopictus*, *Piarus basalis* and *Pintes fasciata* and *vestita;* which, it will be observed, are *all* the acknowledged genera except *Hedobia* and the South American *Trigonogenius*.

† On account of the pile with which it is sometimes clothed, the anterior emargination of the labrum often appears *at first sight* considerably shallower in some genera than in others; but when viewed through a transparent medium (on mounting them in balsam) I find it nearly the same in all.

which I am anything but certain should not in reality be regarded as the *whole mentum* (for, when mounted in balsam, it is seen to be separated from the transverse basal-piece by a distinct articulative line), is an immense, central, narrow, subtriangular, or rather mitriform, corneous organ, widest at (or just before) its base, and gradually attenuated to its apex, where it is more or less obtuse. This monstrous organ (which has usually been overlooked!) rests upon (and fits into the centre of) a *broader transverse base* (closely soldered to the jugulum) which has frequently been treated as the entire mentum: but, as just stated, I am not altogether satisfied that it should be taken as a part of the mentum at all, seeing that it is *more* separated from the above-mentioned mitriform process than it is from the jugulum. At all events, in dissection, it is very difficult to split-off this wide transverse basal portion in anything like a definite shape; sometimes it comes away with elongated acute anterior angles, whilst at others it breaks-off (even in the same species) leaving no angles at all, *and yet with equal symmetry*. At any rate its exact outline (with reference to its lateral angles and breadth) is so extremely doubtful, that I think it cannot safely be employed as affording any character of generic importance.* The ligula (which must next be noticed) is always long and narrow, and more than half of it is concealed behind the mitriform process of the mentum; but it is slightly rounded, divergent, and pilose, towards its apex,—at only a short distance from which the palpi are implanted.

Such, then, are the *instrumenta cibaria* of the *Ptinidæ*. The only other structural feature which would seem to be very constant throughout the family is the more or less close approximation of the antennæ† (which have their second joint short, and the

* I perceive, since the above was written, that M. Jacq. Duval, in his recent enunciation of the family-characteristics of the *Ptinidæ*, has absolutely omitted all mention of (and therefore rejected) this transverse basal-piece as forming a part of the mentum [—"Menton corné, grand, plus ou moins fortement triangulaire, entier"]; but this possibly may be regarded as somewhat rash, for it is at least as doubful whether it be a portion of the jugulum as it is whether it belongs to the mentum. Still, as above stated, I am inclined to think (more particularly from the uncertainty of its shape) that it would be *better* perhaps to leave it unnoticed when describing the several menta.

† There are one or two exceptions, however, even to this. *Hedobia* is one of them; and M. Duval states that the true *Trigonogenii* from Chili (which are generically distinct from the Mediterranean and Atlantic species) have their antennæ widely separated at the base. Also my *Ptinus nigrescens* and *fragilis*, from Madeira, possess the same character (the latter accompanied by a rather conspicuous biarticulated club), and will probably require eventually (at any rate the *P. fragilis*) an additional genus for their reception.

apical one usually acuminated). The exact form and length of the sterna, the relative distance of the hinder coxæ from each other, the proportions of the abdominal segments and tarsal joints, the development of the eyes, wings and scutellum, the gibbosities of the pronotum, and the occasional peculiarities of the sexes, are all points (and very significant ones) from which the diagnoses of the several genera have principally to be compiled.

The *Ptinidæ* constitute a most important group in the Canary Islands,—as indeed may be gathered from the fact, that, out of the fourteen members hitherto detected there are indications of no less than four genera which have not, up to the present time, been enunciated; three of which, moreover, contain features of a most anomalous kind, and hitherto quite unprecedented in this small family. In attempting to collocate them, however, *inter se*, they would appear to arrange themselves in a circle,—the most abnormal characters fading-off in two opposite directions, amongst forms which gradually coalesce. Thus, commencing, for instance, with the extraordinary genus *Casapus*, distinguished (*inter alia*) by its apically-excavated labial-palpi, its obtuse mandibles, and the swollen basal-joint of its two hinder male-feet, we are led on, by *Dignomus* (which combines this scooped-out apex of the labial-palpi with the outward configuration, and general details of *Ptinus*), into *Ptinus proper*. From *Ptinus* the passage is simple enough to *Mezium*; and from thence into *Nitpus* and *Sphæricus* (which are almost identical, except that the former has a diminished number of joints both for its antennæ and posterior male-feet). From *Sphæricus* we glide very naturally into *Piarus*,—which possesses most of the peculiarities of the former, together with some of the distinguishing features of the next genus, *Piotes*; which last, in the immensely expanded first-joint of its hinder male-tarsi, no less than its nodose-costate prothorax, the obsolete subsetulose ridges at the base of its elytra, and its undistinguishable scutellum [—though *not*, however, in the construction of its mandibles and labial-palpi], brings us back again to *Casapus*.

Genus Casapus, nov. gen. (Pl. VIII. fig. 1, 2, 3.)

Corpus (inter *Ptinidas*) magnum, vel ellipticum vel elongato-ovatum, politum, plus minus parce squamosum et pilosum necnon ad humeros setosum, apterum: *capite* deflexo; *oculis* subrotundatis, vix prominulis: *prothorace* postice plus minus gradatim angustiore, basin versus plus minus 4-nodoso-costato: *scutello* haud observando: *elytris* subconnatis, ad basin plus minus longitudinaliter costatis: *metasterno* brevi, postice

(inter coxas posticas) sat profunde et obtuse arcuato-inciso: *abdominis segmento penultimo* vix brevi. *Antennæ* robustæ, filiformes, ad basin fere approximatæ, articulo 1mo robusto, 2do breviusculo, reliquis longitudine vix crescentibus (ultimo elongato-fusiformi, ad apicem leviter acuminato). *Labrum* (1 a) subquadratum, apice leviter emarginatum pilosum, angulis anticis paulo rotundatis ciliatis. *Mandibulæ* (1 b) magnæ, corneæ, validissimæ, latæ, subquadratæ sed apicem versus internum oblique truncatæ obtusissimæ, extus versus basin parce pilosæ. *Maxillæ* (1 c) bilobæ, lobis brevibus, valde, dense et longe pilosis; *externo* subangusto, leviter incurvo; *interno* paulo breviore, lato: *stipite maxillari* in processum externum obtusum (mox infra palporum insertionem) producto. *Palpi* subclavati; *maxillares* articulo 1mo elongato angusto valde arcuato, 2do et 3tio crassioribus subæqualibus, ultimo longissimo subfusiformi apice leviter acuminato; *labiales* (1 d) mox pone apicem ligulæ inserti, articulo 1mo angusto valde arcuato, 2do breviore crassiore, ultimo magno robusto oblongo, ad apicem ipsum plus minus sinuato-inciso. *Mentum* corneum angustissimum transversum, angulis anticis acutiusculis, apice lobo maximo medio mitriformi parce piloso auctum. *Ligula* elongata, angusta, apice paulo rotundata pilosa. *Pedes* (præsertim in maribus) elongati, robusti; *antici* fere approximati, *intermedii* paulo distantiores, *postici* sat (sed haud valde) distantes: *femoribus* elongatis, subclavatis: *tarsis* crassiusculis; *anticis* articulis 4 basalibus gradatim leviter decrescentibus; *intermediis* articulo 1mo paulo majore, 3 sequentibus gradatim leviter decrescentibus; *posticis* articulo 1mo elongato (in maribus, 1 e, maximo dilatato), 3 sequentibus gradatim leviter decrescentibus, ultimo breviusculo.

Obs.—Genus structurâ palporum labialium articuli ultimi excavati, mandibulis apice oblique truncatis (nec dentatis) obtusissimis, tarsorum posticorum articulo basalari in maribus incrassato, metasterno brevi, scutello obsoleto, prothorace elytrisque ad basin plus minus nodoso-costatis corporeque magno aptero polito plus minus parce piloso et ad humeros setoso, inter *Ptinidas* adhuc cognitas valde anomalum.

A κάσας, pulvinus, et πούς, pes. [Typus—*Casapus Bonvouloirii.*]

The singular and gigantic *Ptinidæ* to receive which the present genus is proposed appear to constitute a geographical assemblage peculiar to the Canarian archipelago. They are perhaps the most

anomalous members of the family which have hitherto been detected,—the remarkable (apically-excavated) terminal joint of their labial palpi and exceedingly blunt, obliquely truncated, edendate mandibles, in conjunction with their obsolete scutellum, and large, polished, apterous bodies (which in most of the representatives are sparingly studded with long erect hairs on the elytra, and with stronger and denser setæ at the shoulders), giving them a character quite their own. The hinder region of their prothorax (which is gradually narrowed) and the base of their elytra are embossed with more or less distinct noduliform ridges (clothed with either setæ or scales); their metasternum is short, and circularly scooped-out between the posterior coxæ; and the first joint of their hinder male-feet (a structure, however, which exists in another of the Canarian genera, *Piotes*) is more or less expanded, or enlarged. In the proportions of its maxillæ, mentum, ligula and upper-lip [*vide* the Plate], *Casapus* does not differ appreciably from the normal members of the *Ptinidæ*.

§ I. *Elytra setis rigidis erectis plus minus obsita. Palporum labialium articulus ultimus apice profunde excavatus.*

1. *Casapus Bonvouloirii*, n. sp. (Pl. VIII. fig. 1.)

C. niger, obsoletissime subænescens et (oculo valde armato) alutaceus; prothorace subpicescenti, angustulo (antice vix dilatato), valde et subæqualiter 4-nodoso-costato, dense (præsertim in nodis et ad basin) fulvo-squamoso; elytris ellipticis, basi truncatis apice acuminatis, leviter striato-punctatis, pilis perpaucis elongatis versus apicem et setis densioribus ad basin (præsertim ad humeros) obsitis, costis 4 basalibus (postice evanescentibus) maximis elevatis, fasciis duabus [sc. antemediâ sæpius obsoletâ, et postmediâ distinctiore dentatâ] albido-ornatis; antennis pedibusque elongatis, robustis, rufo-ferrugineis, squamosis.

Long. corp. lin. $1\frac{3}{4}$—2.

Habitat in sylvaticis editioribus Teneriffæ, sub lapidibus, hinc inde haud infrequens. Species valde indigena distincta formosa et in honorem amici mei Dom. H. De Bonvouloir, Parisiis, auctoris Monographiæ *Throscidum* accuratissimæ felicissimi a meipso dicata.

This large and beautiful *Casapus* may be known from the other species here described by its greatly (and subequally) 4-nodose-costate prothorax, and by its very lightly striate-punctate, *elliptical*, and apically-acuminated elytra (the widest part of which is a little *before* the middle). Its elytra, also, are much less densely

pilose than is the case in any of the following species except the *C. subcalvus*, and have their basal nodes (or abbreviated costæ) considerably elevated, or developed, causing the scutellary region to seem very deeply impressed. Their surface, moreover (which appears minutely alutaceous when viewed beneath the microscope), has a just perceptible *subœnescent* tinge, and is usually ornamented with a rather conspicuous postmedial zigzag fascia of whiter scales,—the anterior one being for the most part more or less (or even entirely) obsolete. It is attached apparently to the sylvan districts of Teneriffe, at intermediate and lofty elevations, and is generally very scarce. Nevertheless in the damp woods on the mountains above the Agua Mansa I have taken it in tolerable numbers (beneath stones and pieces of rotten wood); as also, though much more sparingly, at the Agua Garcia. I have great pleasure in dedicating it to my friend M. H. De Bonvouloir, of Paris, so well known for his devotion to the cause of Entomology, and whose recent Monograph of the *Throscidæ* (a pattern of what a monograph should be) has given him a distinguished place amongst our leading Coleopterists.

2. *Casapus dilaticollis*, n. sp.

C. niger; prothorace picescenti, antice plus minus distincte dilatato, costis discalibus obsoletis (disco subæquali), lateralibus sat distinctis, ad basin parce fulvo-squamoso; elytris ovalibus, basi truncatis, levissime substriato-punctatis, pilis elongatis ubique et setis densioribus ad basin (præsertim ad humeros) obsitis, costis 4 basalibus (postice evanescentibus) minus elevatis, fasciâ indistinctâ postmediâ [antemediâ obsoletâ] albido-ornatis; antennis pedibusque elongatis, sat robustis, rufo-ferrugineis, squamosis.

Var. β [an species distincta?] prothoracis costis discalibus paulo majoribus, elytris parcius pilosis, postice vix acutioribus, minutissime sub-alutaceis, costis basalibus magis elevatis.

Long. corp. lin. vix $1\frac{2}{3}$—2.

Habitat in locis inferioribus et intermediis Teneriffæ, sub lapidibus, passim; ad Orotavam et in montibus mox supra Sanctam Crucem statum typicum deprehensi; sed *var.* β locis paulo editioribus, sc. Souzal, Las Mercedes, Taganana et cæt. pertinet.

Whilst the last species is peculiar to the higher elevations, within the sylvan districts of Teneriffe, the present one descends to the level of the sea-shore. It may be readily known from the

C. Bonvouloirii by its rather more shining and less alutaceous surface, by its more piceous and anteriorly-expanded prothorax (which has the two intermediate ridges smaller, causing the disk to be *comparatively* flattened), and by its more oval and less acuminated elytra,—which are widest about the middle, more densely studded with long erect hairs than is the case in its ally, have their basal costæ very much less developed, their striæ (which however are somewhat variable) less apparent, and their hinder fascia (the anterior one being usually quite obsolete) straighter and much more obscure. The "*var.* β" may perhaps be specifically distinct; indeed in its rather more developed costæ, and its slightly more elliptic, subalutaceous and less pilose elytra, it is intermediate between the present insect and the last one; nevertheless the form of its anteriorly-widened prothorax must I think tend to associate it with the *C. dilaticollis* rather than with the *Bonvouloirii*. The typical state is not very uncommon, beneath stones, in the rocky ground immediately outside the Puerto of Orotava, adjoining the cemetery; as also, though more sparingly, on the ascent of the mountains around Santa Cruz: but the "var. β" (if indeed it be not specifically distinct) seems to inhabit a somewhat higher region,—Souzal, Las Mercedes and Taganana being the spots in which I have hitherto observed it.

3. *Casapus alticola*, n. sp. (Pl. VIII. fig. 2.)

C. niger; prothorace picescenti, antice plus minus distincte dilatato, costis discalibus obsoletis (disco subæquali), lateralibus sat distinctis, ad basin parce fulvo-squamoso; elytris ovalibus, basi paulo truncatis, profunde striato-punctatis, pilis elongatis densis ubique et setis densioribus ad basin (præsertim ad humeros) obsitis, costulis 4 basalibus subobsoletis, fasciis duabus fractis [sc. antemediâ et postmediâ, plerumque subæqualiter distinctis] albido-ornatis; antennis pedibusque subelongatis, sat robustis, rufo-ferrugineis, squamosis.

Long. corp. lin. vix $1\frac{2}{3}$—2.

Habitat sub lapidibus in editioribus Teneriffæ, usque ad 8000 s. m. ascendens.

Like the *C. Bonvouloirii*, the present *Casapus* is confined to lofty elevations, and is apparently peculiar to Teneriffe,—ascending indeed to a still higher altitude than that species, for I have taken it at upwards of 8,000 feet above the sea. It is nevertheless closely allied to the *C. dilaticollis* of the lower regions, with which in its shape and clothing it is almost coincident; and I am far from certain that it is in reality more than a phasis of that insect.

Its elytra, however (which have their basal plaits still less developed), are more densely pilose, as also very much more deeply striate-punctate, and with their *two* fasciæ usually pretty distinct, —even the anterior one being nearly always tolerably conspicuous. It is evidently extremely rare, the few specimens which I have seen (only nine in number) having been captured by myself in the damp woods above the Agua Mansa, and (amongst the Retamas) on the Cumbre adjoining the Canadas above Ycod el Alto.

4. *Casapus radiosus*, n. sp.

C. niger; prothorace picescenti, antice vix dilatato, costis discalibus magnis elevatis, lateralibus subobsoletis, dense (præsertim in nodis et ad basin) fulvo-squamoso; elytris ovalibus, basi valde truncatis, profunde substriato-punctatis, pilis rigidis minus elongatis ubique et setis densioribus ad basin (præsertim ad humeros) obsitis, costulis 6 basalibus (postice evanescentibus) sat elevatis, fasciis duabus fractis [sc. antemediâ et postmediâ, plerumque subæqualiter distinctis] albido-ornatis; antennis pedibusque subelongatis, gracilibus, rufo-ferrugineis, squamosis.

Long. corp. lin. $1\frac{1}{3}$.

Habitat in montibus Canariæ Grandis, sub lapidibus, rarissimus.

The *C. radiosus*, which, so far as I have observed hitherto, is peculiar to Grand Canary, is a good deal allied at first sight to the preceding species. It differs from it, however, as well as from the *C. dilaticollis*, in its limbs being a trifle slenderer, and in having the two dorsal ridges of its prothorax (which is scarcely at all expanded in front) powerfully developed, whilst the lateral ones are sub-obsolete; as well as in the basal costæ of its elytra (although not large) being more sharply defined and numerous,— there being indications of a smaller *intermediate* one on each elytron, between the ordinary (humeral and submedial) ones. Indeed there are traces of even *another* small ridge, between the submedial one and the place of the scutellum; so that the general appearance of the basal region of the elytra of the *Casapus* is that of a *series* of alternately larger and smaller radiating, or divaricating, short plaits (or costæ), which quickly become evanescent behind. In its deeply striate-punctate elytra and the tolerable distinctness of *both* of its fasciæ it has more in common with the *C. altícola* than with the *dilaticollis;* but its erect pile is rather shorter and more rigid than is the case in either of those insects. The few specimens from which the above diagnosis has been compiled were captured by myself, beneath stones, on the mountains above San Martao in Grand Canary during the spring of 1858.

§ II. *Elytra setis erectis carentia. Palporum labialium articulus ultimus apice vix excavatus* (*i. e. obsolete sub-excavatus*)—Subg. *Pithodes*, Woll.

5. Casapus subcalvus, n. sp. (Pl. VIII. fig. 3.)

C. piceo-niger vel piceus; prothorace picescenti, antice vix dilatato, costis discalibus postice sat distinctis, lateralibus subobsoletis, ad basin dense fulvo-squamoso; elytris ovatis, basi paulo truncatis, leviter striato-punctatis, subcalvis (sed parce et brevissime pubescentibus et ad basin plus minus parce setulosis), costulis 4 basalibus (præsertim humeralibus) subobsoletis, fasciâ postmediâ indistinctâ (plerumque omnino obsoletâ) albido-ornatis; antennis pedibusque subelongatis, sat robustis, rufo-ferrugineis, squamosis.

Long. corp. lin. vix $1\frac{2}{3}$—2.

Habitat in ins. Hierro, rarissimus,—a Dom. Gray et meipso, mense Februario A.D. 1858, haud procul ab oppido Valverde sub lapidibus parce captus.

The *C. subcalvus* is at once conspicuous amongst the other *Casapi* here described by the total freedom of its elytra (which are *ovate*, and somewhat narrowed in front) from erect pile,—a few stiff (and often very short) setæ about the shoulders and extreme base being alone visible. There are, however, indications, beneath a high magnifying power, of an excessively minute, and sparing, *decumbent* pubescence, which does not exist in any of the preceding species. Its prothorax is small, hardly at all dilated anteriorly, and with its two dorsal costæ pretty evident behind, but with the lateral ones sub-obsolete. The humeral ridge at the base of either elytron is almost evanescent, but the submedial one is tolerably distinct; and the first joint of its posterior male-feet (3 b) is very greatly enlarged. In most of the specimens which I have seen (thirteen in number) there is no indication whatsoever of paler fasciæ; but in one or two examples there are obscure traces of a broken transverse band behind the middle of the elytra. It is a somewhat aberrant member of the present genus, not only from the fact of its elytra being free from erect hairs, and from its having the basal articulation of its hinder male-tarsi more powerfully developed than is the case in any of the preceding species, but likewise (which is still more important) from the extreme apex of its labial palpi possessing only the *slightest tendency* (*vide* 3 a) to be scooped-out,—though this peculiarity of structure is at any rate *sufficiently* expressed to leave no doubt of its being, at all events, *just recognized*. In many respects it approaches the *Piotes vestita* (which is, also, aberrant in its particular group), from

Palma; but I think, nevertheless, that it has decidedly *more* in common with the *type* of *Casapus* than it has with that of *Piotes*.

The *C. subcalvus* is apparently very rare, and (so far as I have observed hitherto) peculiar to the island of Hierro,—where during February of 1858 it was captured sparingly, both by Mr. Gray and myself, from beneath stones, in the region to the westward of Valverde.

Genus Dignomus, nov. gen. (Pl. VIII. fig. 4.)

Corpus mediocre, parallelo-oblongum, sat dense squamoso-marmoratum (sed haud pilosum), alatum: *oculis* maximis, subrotundatis, valde prominentibus: *prothorace* postice constricto, in disco valde 4-nodoso-gibboso: *scutello* magno, subrotundato: *elytris* liberis, circa humeros fere rectangulatis (humeris ipsissimis rotundatis): *metasterno* longiusculo, postice (inter coxas posticas) profunde subtriangulariter inciso et in medio canaliculâ basali impresso; *alis* parvis: *abdominis segmento penultimo* vix brevi. *Antennæ* et *instrumenta cibaria* fere ut in genere præcedenti, sed *illis* paulo longioribus gracilioribus, *labro* (4 a) magis piloso, *mandibulis* (4 b) ut in genere *Ptino*, i. e. ad apicem acutis et infra (mox ante medium) dente lato anguliformi armatis, necnon *mento* (4 d) paulo breviore, lobo centrali vix magis triangulari apice acutiore. *Pedes* elongati, gracillimi; *antici* sub-approximati, *intermedii* vix distantiores, *postici* leviter distantes: *femoribus* elongatis, gracilibus, vix clavatis: *tibiis tarsis*que elongatis, gracilibus; *his* filiformibus, articulo basalari in *anticis*, longiusculo, in *posterioribus* longissimo, 3 sequentibus gradatim leviter decrescentibus, ultimo longiusculo.

Obs.—Genus inter *Casapum Ptinum*que situm,—cum *illo* palporum labialium articulo ultimo anomalo excavato abdominisque segmento penultimo breviusculo (nec brevissimo), sed cum *hoc* mandibularum metasternique structurâ, prothorace postice coarctato, scutello alisque distinctis, coxis posticis haud valde distantibus, elytris liberis necnon formâ generali congruens: sed in oculis maximis valde prominentibus, in menti lobo ad apicem acutiore, antennis pedibusque gracillimis, necnon tarsis longissimis, articulo basalari in *posterioribus* (haud in posticis solum) valde elongatis a genere utroque discedit.

A *δίγνωμος* [*δις* et *γνώμη*], dubius.

Until I had dissected the curious insect from which the above characters have been compiled I had conceived it to be a normal

Ptinus,—with which in nearly every external feature, except its immense and very prominent eyes, its exceedingly slender legs (the *four* hinder tarsi of which have their basal joint greatly elongated), and the less abbreviated fourth-segment of its abdomen, it entirely agrees. Nevertheless a more critical examination of it has proved that, in addition to these outward particulars (which I was prepared to regard as specific ones), it possesses the most extraordinary apical articulation of the labial palpi (*vide* 4d) which I have already described as belonging to the last genus. It is therefore strictly intermediate between *Casapus* and *Ptinus:* for, whilst its only *slightly* shortened penultimate abdominal segment and the anomalous excavation of its labial palpi would unite it with the former, in the structure of its mandibles and metasternum, as well as in its posteriorly coarctate prothorax, its distinct scutellum and wings, and its general *facies*, it is coincident with the latter. However in its enormous and greatly projecting eyes, no less than in its very slender legs (with the above mentioned peculiarity of their feet), and the more apically-acute central lobe of its mentum, it recedes from both of those groups. Its habits, moreover (of which shortly) are somewhat singular.

6. *Dignomus gracilipes*, n. sp. (Pl. VIII. fig. 4.)

D. nigro-piceus; prothorace parvo, squamis fuscis, albidis et præsertim fusco-albidis dense tecto; scutello albido-squamoso; elytris profunde punctato-striatis, squamis albidis parcius marmoratis (ad humeros ipsos fuscis), plagâ mediâ indistinctâ laterali (in singulo positâ) squamis carente; antennis pedibusque gracilibus, rufo-ferrugineis, plus minus fusco-albido-squamosis.

Long. corp. lin. $1\frac{1}{3}$—$1\frac{2}{3}$.

Habitat in arenosis insularum Lanzarotæ et Fuerteventuræ, rarissimus,—in stercore arido bovino, equino, camelino (nec humano), latitans.

On account of the fragile nature of the whitish scales with which this singular insect is clothed, the elytra are usually a good deal denuded,—giving the surface a clouded, or mottled, appearance. Nevertheless a large lateral patch on either side, extending (like a broken fascia) from the middle of the external margin to about the disk of each elytron, seems normally to be more or less free from scales; and even another, smaller one, towards the apex, is often faintly indicated. The species seems to be very rare, and confined (so far as I have observed hitherto) to the dry sandy plains of Lanzarote and Fuerteventura,—where in March and

April of 1859 I took it sparingly, both in the neighbourhood of Arreciffe and Papagayo (of the former), and near Corralejo (in the north of the latter). In almost every instance I found it secreted (in company with the *Piarus basalis*, the *Notiomimus fimicola*, and a beautiful *Corynetes*) within the dried dung of horses, oxen and camels.

Genus Ptinus.

Linnæus, Syst. Nat. ii. 565 (1767).

The genus *Ptinus*, as now restricted, may be regarded, so far as the parts of its mouth are concerned, as possessing the most ordinary characters of the family,—which have been already pointed out. In other details it may be known by its comparatively long metasternum and less distant hinder coxæ, by the penultimate segment of its abdomen being usually much shortened, by its conspicuous scutellum and developed wings, by its posteriorly-constricted and anteriorly-nodulose prothorax, by its elongate and slender limbs, and by (most frequently) the dissimilarity of its sexes. The *Ptini proper* are insects which are more often attached to articles of merchandize, and the dwellings of man, than to the open country; so that they have become more widely diffused over the civilised world, through the medium of commerce and by human agencies generally, than have the members of the allied groups,—most of which (with the exception perhaps of *Mezium* and *Gibbium*) are essentially independent in their modes of life.

7. *Ptinus testaceus*? Oliv.

P. ferrugineus, valde (præsertim in prothorace) subsetuloso-pubescens; prothorace postice valde constricto; scutello albido-fulvescenti-squamoso; elytris ellipticis, punctato-striatis; antennis pedibusque elongatis, gracilibus, parce squamosis.

Long. corp. lin. $1\frac{1}{3}$.

Ptinus testaceus? Oliv., Ent. ix. 8 (1790).
——— *advena*? Woll., Ins. Mad. 261 (1854).
——— *testaceus*? Id., Cat. Mad. Col. 89 (1857).
——— ———? de Boield., Ann. de la Soc. Ent. de France (3ième série), iv. 654 (1857).

Habitat ins. Hierro; in domo quodam exemplar unicum (certe introductum) collegi.

I believe that the single specimen (a female) from which the above diagnosis has been drawn-out is certainly identical with the *P. advena* of the "Insecta Maderensia" (though I have not now

the original type for comparison),—which M. de Boieldieu identified with the *P. testaceus* of Olivier. It is clearly a naturalized species, and perfectly unimportant; and was captured by myself, in a house, during my sojourn in the island of Hierro, at the end of February, 1858.

Genus Mezium.

(Leach) Curtis, Brit. Ent. v. 232 (1828).

8. *Mezium sulcatum*, Fab.

M. nigro- vel rufo-piceum; capite prothoraceque densissime flavo-albido-squamosis, hoc valde 4-nodoso-costato; elytris politissimis, interdum setis paucis rigidis erectis obsitis, ad basin ipsissimam squamarum fasciculis minutis instructis; antennis pedibusque robustissimis, crassis, dense subsetuloso-squamosis.

Long. corp. lin. $\frac{3}{4}$—vix $1\frac{1}{2}$.

Ptinus sulcatus, Fab., Spec. Ins. i. 73 (1781).

Mezium sulcatum, Curt., Brit. Ent. v. 232 (1828).

——— ———, Woll., Ins. Mad. 273 (1854).

——— ———, Id., Cat. Mad. Col. 92 (1857).

Habitat insulas Canarienses, sub lapidibus in aridis saxosis necnon præsertim in cavernis tufæ, vulgare.

The common *Mezium sulcatum*, which in central and southern Europe is constantly imported with various articles of merchandize, and is therefore generally to be found (when at all) in and around the dwellings of man, would seem to be truly indigenous in the Atlantic Groups. At Madeira it is pretty common, beneath stones (in company with the *Ptinus mauritanicus* and *Hegeter elongatus*), in barren rocky spots and open basaltic caverns; and at the Canaries it often teems, in similar localities,—where it is certainly universal throughout the Archipelago. I have myself only captured it in six out of the seven islands of the cluster, not having happened to find it during my short stay at Gomera; but there cannot be the slightest doubt that it must exist there also. At Arguineguin, in the south of Grand Canary, I have observed it in the utmost profusion,—under stones, amongst the small groves of Tamarisk, facing the sea; but undoubtedly its favourite haunts are the dry, rocky (though open and exposed) caves with which the tufa and basalt everywhere abound, and to which the various Hegeters (and a few species of *Helops*) are more peculiarly attached. M. de Boieldieu, in his Monograph of the *Ptinidæ*, has failed to notice the *tendency* of its elytra (which are usually quite glabrous) to be more or less sparingly studded with a few strong erect setæ; and he has likewise omitted all allusion to its

most remarkable feature, namely that the *extreme base* of its elytra is densely fringed with a row of minute pads of closely-set scales.

Genus Nitpus. (Pl. VIII. fig. 5.)

Jacq. Du Val, Glan. Entom. 138 (1860).

Corpus parvum, elytris subglobosis, parce squamosum (sed haud pilosum), apterum : *oculis* parvis, subrotundatis, paulo prominulis : *prothorace* æquali, subcylindrico (ad basin vix constricto) : *scutello* haud observando : *elytris* connatis : *metasterno* brevi, postice (inter coxas posticas) facile et leviter arcuato : *abdominis segmento penultimo* brevissimo. *Antennæ* fere ut in *Casapo*, sed (in utroque sexu) 9-articulatæ. *Instrumenta cibaria* (5 a, 5 b, 5 c, 5 d) fere ut in *Dignomo*, *Ptino* et cæt., sed *menti lobo centrali* (5 d) paulo angustiore. *Pedes* longiusculi, subrobusti ; *antici* sub-approximati, *intermedii* paulo distantiores, *postici* valde distantes : *femoribus* subclavatis : *tarsis* crassiusculis, articulis 4 basalibus gradatim leviter decrescentibus ; *posticis* in sexu masculo (5 e) 4-articulatis, art. 1mo longiusculo.

Obs.—Genus in structurâ antennarum tarsorumque masculorum posticorum inter *Ptinidas* abnormale, sed in reliquis minutiis cum *Sphærico* fere omnino congruens.

The genus *Nitpus* was established lately by M. Jacquelin Duval for the reception of a small member of the present family which is common in Teneriffe, and which so closely counterfeits at first sight my *Sphæricus albopictus*, from Madeira, and its near Canarian ally the *S. simplex*, that, until examining it minutely, I had inadvertently mixed it up with specimens of the latter insect. After a careful dissection of these species, and an accurate comparison of their several parts, they appear to me to be almost identical in every respect, except that in *Nitpus* the antennæ and hinder male-feet have their joints numerically reduced,—those of the former (in both sexes) being merely *nine* and those of the latter *four*. In the rest of their structural details I can detect no differences worth mentioning,*—their various oral organs, as well as the form of their metasterna, abdominal segments, and basally-distant posterior coxæ, being similar ; nevertheless the primary importance

* The upper-lip in *Nitpus* is perhaps a little more pilose in front, and just perceptibly rounder at the sides ; the shoulder-like *stipes* of the maxillæ is not quite so square at its apex, and the terminal joint of the palpi is possibly a trifle less elongate ; but such small differences (which are but barely appreciable) cannot be of more than specific importance.

of the two above-mentioned characters would seem to necessitate the retention of *Nitpus* as a distinct genus.

9. *Nitpus gonospermi*, J. Duval.

N. capite prothoraceque nigro-piceis et squamis subflavescenti-cinereis parce tectis, hoc subcylindrico (ad latera vix rotundato) in medio tenuissime canaliculato; elytris plus minus clarioribus, rotundatis, sat profunde punctatis, fasciis duabus parvis [sc. antemediâ plerumque obsoletâ et postmediâ] plus minus indistinctis oblique curvatis fractis subflavescenti-cinereis ornatis; antennis pedibusque robustis, clare rufo-ferrugineis.

Long. corp. lin. $\frac{2}{3}$—1.

Nitpus gonospermi, Jacq. Duval, Glan. Ent. 138 (1860).

Habitat Teneriffam, usque ad 2,000 s. m. ascendens, hinc inde vulgaris.

Apart from its *generic* characters (of antennæ and hinder male-feet), the *N. gonospermi* may be distinguished from the *Sphœricus simplex* (to which at first sight it is closely allied) by being, on the average, a trifle larger, and with its limbs usually of a clearer hue and rather more robust. Its prothorax, also, is somewhat more cylindric (being a trifle less rounded at the sides), and with a minute narrow central channel; its elytra are more strongly punctured and globose, and with their very indistinct fasciæ a *little* more evident, arcuated, and oblique; and its scales are altogether less white, or with a yellower tinge. It is a common insect throughout the lower and intermediate regions of Teneriffe; but, although absolutely abundant in certain places, I have not captured it in any of the other islands of the group: yet the *Sphœricus simplex*, which has *not* been observed in Teneriffe, supplies its place in Hierro. Whether it attaches itself to particular plants I am unable to say; nevertheless I have certainly beaten it in great profusion from off a yellow tansy in the waste ground immediately above the Puerto of Orotava; and I have likewise brushed it out of the thick herbage in a small Barranco at Souzal, as well as at Taganana, and elsewhere. It has also been taken by the Rev. R. T. Lowe near Garachico.

Genus Sphæricus.* (Pl. VIII. fig. 6.)

Woll., Ins. Mad. 263, pl. v. f. 4, 5, 6 (1854).

Corpus, *antennæ*, *instrumenta cibaria* (6 a, 6 b, 6 c, 6 d) et *pedes*

* On what principle of common fairness M. Jacq. Duval cancels the name (even though I only registered it as of subgeneric importance) which I proposed

ut in *Nitpo;* sed *oculis* interdum minus rotundatis, *prothorace* minus subcylindrico (ad latera paulo magis æqualiter rotundato), *antennis* vix gracilioribus et 11- (nec 9-) articulatis, necnon *tarsis omnibus* (in utroque sexu) pentameris.

The seven species which I characterized in the "Insecta Maderensia" as aberrant *Ptini*, under the Sectional name of *Sphæricus*, are evidently members of M. De Boieldieu's Division of *Trigonogenius* for which he retained Gené's title of *Tipnus:* indeed the *albopictus* (so universal throughout the Madeiran archipelago, and which is intimately related to the rest) was actually examined by M. De Boieldieu, whilst compiling his Monograph of the *Ptinidæ*, and referred by him without doubt to that particular group. Hence, in my recent dissections,* I have not hesitated to regard both the *albopictus* and *simplex* as *normal* representatives of *Tipnus* (as registered by M. De Boieldieu, and subsequently characterized by M. Duval). Nevertheless with respect to the mere *name* of the genus, there can be no question [*vide* the foot-note, p. 206] that "*Sphæricus*" has the priority.

10. *Sphæricus simplex*, n. sp. (Pl. VIII. fig. 6.)

S. capite prothoraceque nigro-piceis et squamis cinereis parce tectis, hoc ad latera paulo rotundato, subæquali; elytris plus minus clarioribus, ovalibus, vix profunde punctatis, fasciâ

for these insects in 1854, substituting instead one of his own published in 1860, it is difficult to conjecture. In my short sectional diagnosis I gave at all events *sufficient* particulars for recognizing these species from the true *Ptini* [for, in addition to *figures of three of them*, I called attention to their globose form, apterous bodies, scaly (instead of pilose) surface, convex (instead of posteriorly constricted) prothorax, and (besides two other characters of less importance) their obsolete scutella], so that it is a simple act of injustice when M. Duval disposes of all this in the few following words: "Du reste, M. Wollaston basait son groupe sur des caractères sans valeur." Surely M. Duval must have been aware that, after all, those few points to which I alluded embody the main differential features of the group; at any rate in glancing at his own diagnosis I find very little else, of a distinctive kind, referred to: and even if they did *not* embody them, it would still be no argument for the rejection of the title which I imposed on it. As for his observation that, in my Catalogue of 1857, I suppressed the name of *Sphæricus* in favour of *Trigonogenius*, of Gay and Solier, it is mere "special pleading." The *reason why* I substituted *Trigonogenius* in that Catalogue, was, because it was an older term than my own (so that the law of priority required the change): but now that the name of *Trigonogenius* is limited to the South American species, it is quite evident that the title which I proposed for the European and Atlantic ones (three of which were absolutely figured) should be adopted.

* My dissections of *Sphæricus*, given in the Plate, are taken from the Madeiran *albopictus* (which is almost identical, specifically, with the *simplex*).

indistinctâ postmediâ [antemediâ obsoletâ] fractâ cinereâ ornatis; antennis pedibusque piceo- vel rufo-ferrugineis; oculis parvis, rotundatis.

Long. corp. lin. $\frac{2}{3}$—$\frac{7}{8}$.

Habitat in ins. Hierro, a meipso prope oppidum Valverde, Februario A.D. 1858, detectus.

This little *Sphæricus* is almost identical, at first sight, with the *S. albopictus*, which is so universal and abundant throughout the Madeiran Group; nevertheless it may be at once known from it, when placed beneath the microscope, by its tarsi being more conical,—the penultimate joint, which is strongly bilobed in the *albopictus*, being in the *S. simplex* both narrow and entire. In other particulars, the fasciæ of the Canarian species are less developed than is the case in its ally,—the antemedial one being apparently quite suffused and obsolete, whilst the postmedial one is more indistinct and not so arcuate; but the obscure, ill-defined, longitudinal, cloud-like band which tends to unite the two is, on the other hand, perhaps rather *more* traceable. Its *primâ facie* distinctions from the *Nitpus gonospermi* (apart from generic ones) have been already implied in my observations under that insect. As mentioned above, the *S. simplex* has as yet only been noticed in the island of Hierro,—where, during my residence there with the Rev. R. T. Lowe in February, 1858, I captured a few specimens of it in a small Barranco immediately to the north-west of Valverde.

11. *Sphæricus gibbicollis*, n. sp.

S. capite prothoraceque fusco-piceis et squamis flavescenti-cinereis dense tectis, hoc ad latera distinctius rotundato, in disco gibboso sub-binodoso et in medio canaliculato; elytris clarioribus (rufo-ferrugineis) ovalibus vel rotundato-ovalibus, profunde punctatis, fasciâ indistinctâ postmediâ plus minus obsoletâ fractâ flavescenti-cinereâ ornatis; antennis pedibusque robustis, clare rufo-ferrugineis, squamosis; oculis reniformi-ovatis.

Long. corp. lin. $\frac{7}{8}$—$1\frac{1}{3}$.

Habitat in ins. Lanzarotâ et Fuerteventurâ, rarissimus.

In the shape of its eyes, which are ovate-reniform (being rather acute behind and broad in front), instead of round, the *S. gibbicollis* differs not only from the preceding species but from all the *Sphærici* with which I am acquainted. In other respects, it recedes from the *S. simplex* in being apparently rather larger and

more ferruginous ; in its head and prothorax (the latter of which is more gibbous and convex, as also sub-binodulose and channeled, on its disc) being more densely clothed with *yellowish-white* scales ; in its elytra being more deeply punctured ; and in its limbs being rather more scaly and robust. So far as I have observed hitherto, it is peculiar to Lanzarote and Fuerteventura, and is excessively rare. From the latter indeed I possess but a single specimen ; but in the former I have taken it sparingly, at Yè, in the extreme north of the island.

Genus Piarus, nov. gen. (Pl. VIII. fig. 7.)

Corpus mediocre, elytris rotundato-ovalibus, parce squamosum necnon pilis rigidis erectis ubique æqualiter vestitum, apterum : *oculis* parvis, subrotundatis, prominulis : *prothorace* subæquali, ad latera paulo rotundato : *scutello* parvo, triangulari, inter setulas ægre observando : *elytris* connatis : *metasterno* brevi, æquali, postice (inter coxas posticas) facile et leviter arcuato : *abdominis segmento penultimo* vix brevi. *Antennæ* et *instrumenta cibaria* (7a, 7b, 7c, 7d) fere ut in *Ptinidis typicis*, sed *mandibulis* (7b) obtusius dentatis, versus apicem internum obliquius subtruncatis (sed minus quam in genere *Casapo*). *Pedes* fere ut in generibus præcedentibus, articulis 4 basalibus (in utroque sexu) gradatim leviter decrescentibus.

Obs.—Genus *Nitpo* et *Sphærico* fere simile, sed species est major et pilis rigidis erectis ubique densissime vestita, scutello distincto triangulari, segmento penultimo abdominali haud brevissimo, necnon mandibulis obtusius dentatis et obliquius truncatis. Corpore sat magno et præsertim elytris dentato-subfasciatis cum genere sequenti (saltem *Piotes inconstans*) melius congruit ; sed prothorax subæqualis est (nec nodoso-costatus), ad latera subæqualiter rotundatus, elytra sunt æqualia (nec ad basin etiam obsolete subcostata, nec ibidem densius setosa), labrum est paulo minus pilosum et vix emarginatum, mandibulæ sunt obtusius dentatæ et magis oblique truncatæ, processus stipitis maxillaris est magis quadrata, necnon tarsi in utroque sexu inter se non discedunt (i. e. posticorum masculorum articulo basalari haud incrassato).

A πιαρὸς, pinguis.

In external contour and size, though more especially in the rigid pile with which its surface is beset, and the tendency of its

elytra to be ornamented with much the same kind of dentate fasciæ (formed by paler scales), the insect from which the above structural formula has been drawn possesses so much in common with the *Piotes inconstans* from Grand Canary that, until critically examining it, I could scarcely believe that it was not a closely-allied member of the same genus. Nevertheless since it is totally free from the chief characteristics of that group (namely the immensely developed first-joint of the hinder male-feet, and the more or less nodose-costate prothorax), and since also the base of its elytra has no appearance whatsoever of the stronger and denser setæ and the obsolete ridges which are more or less indicated in *Piotes* (and carried to an excess in *Casapus*), whilst its scutellum is more evidently developed and its mandibles are much less sharply toothed, and more obliquely truncated at their apex, than is there the case, I have no alternative but to regard it as generically distinct. In minor details, moreover, the upper-lip of *Piarus* is less pilose, and not so deeply emarginate, as that of *Piotes;* and the shoulder-like process of its maxillary *stipes* is squarer and more obtuse.

From *Nitpus* and *Sphæricus* (with which in some respects it might be associated) *Piarus* differs mainly in the larger size and *strongly pilose surface* of the insect which represents it; as well as in its distinct scutellum, its very much less shortened penultimate abdominal segment, and its less acutely dentate, and more obliquely-truncated mandibles.

12. *Piarus basalis*, n. sp. (Pl. VIII. fig. 7.)

P. niger vel piceo-niger; capite sat dense flavescenti-cinereo-squamoso; prothorace densissime granulato- (vel tuberculato-) asperato et setulis fuscis suberectis dense obsito; elytris ovalibus, striato-punctatis, subnitidis, pilis rigidis erectis elongatis dense obsitis et fasciis duabus [sc. basali magnâ conspicuâ dentatâ et sub-apicali parvâ fractâ sæpius obsoletâ] flavescenti-abidis ornatis; antennis pedibusque robustis, ferrugineis, squamosis.

Long. corp. lin. 1—1½.

Habitat ins. Lanzarotam et Fuerteventuram, hinc inde vulgaris: in stercore arido bovino, equino, camelino (unà cum *Notiomimo fimicolâ* et cæteris degens) latitat.

Apart from its *generic* characters already alluded to, the present insect is conspicuous amongst the other *Ptinidæ* here described by the long and erect hairs with which it is densely clothed, by its dark

surface and coarsely granulated prothorax, as well as by the large and rather conspicuous fascia of paler scales with which the base of its elytra is adorned. It seems peculiar to the two eastern islands, Lanzarote and Fuerteventura, and is rather singular in its habits,—occurring usually (in company with the *Dignomus gracilipes*, *Notiomimus fimicola* and a beautiful *Corynetes*) in the dried dung of horses, oxen and camels, in the most arid spots, often in considerable profusion. I have, however, taken it occasionally beneath stones; under which circumstances it was also found by John Gray, Esq., during our sojourn in Fuerteventura.

Genus Piotes, nov. gen. (Pl. VIII. fig. 8, 9.)

Corpus mediocre vel sat magnum, elytris rotundato-ovalibus, plus minus squamosum necnon typice pilis rigidis erectis (præsertim ad humeros) vestitum, apterum: *oculis* parvis, subrotundatis, prominulis: *prothorace* plus minus 2- vel 4-nodoso-costato, ad basin ipsissimam leviter coarctato: *scutello* haud observando: *elytris* connatis, ad basin obsoletissime longitudinaliter subcostatis: *metasterno* brevi, æquali, postice (inter coxas posticas) facile et leviter arcuato: *abdominis segmento penultimo* vix brevi. *Antennæ* et *instrumenta cibaria* (8 a, 8 b, 8 c, 8 d) fere ut in *Ptinidis typicis*, sed *labro* (8 a) apice densius piloso et paulo profundius emarginato et *stipitis maxillaris processu* (8 c) paulo longiore. *Pedes* fere ut in *Casapo*, i. e. crassiusculi, tarsorum posticorum masculorum (8 e) articulo basalari maximo dilatato.

Obs.—Genus articulo basalari tarsorum posticorum masculorum maximo dilatato, prothorace (necnon etiam elytris obsoletissime) ad basin plus minus setoso-nodoso-costato, *Casapo* simulans; sed structurâ instrumentorum cibariorum [sc. mandibularum, palporum labialium et cæt.] cum *Ptinidis* typicis fere congruit: præter cætera, corpore minore densius vestito et haud polito, labro magis piloso coxisque posticis paulo distantioribus a *Casapo* recedit. A genere præcedenti (*Piaro*) *Piotes* prothorace (et etiam elytris ad basin obsoletissime) nodoso-costato (nec æquali), mandibulis acutius dentatis, processu stipitis maxillaris longiore angustiore, necnon tarsorum posticorum masculorum articulo primo maximo dilatato differt.

A πιότης [πῖος], obesitas. [Typus—*P. inconstans*.]

In the remarkably enlarged basal joint of its two hinder male-feet, as well as in the more or less evident noduliform costæ

with which its prothorax and the base of its elytra are embossed (—though in the latter position they are but just traceable, and may be regarded as obsolete), the present genus brings us back again to *Casapus*, with which we commenced this descriptive enumeration of the Canarian *Ptinidæ*. Nevertheless it differs essentially from that group, since it not merely wants the curious excavation at the apex of the labial palpi, and the very obtuse, obliquely truncated mandibles which are there so conspicuous; but, amongst other differences, its body is smaller, much more densely clothed, and *un*-polished, its upper-lip is more pilose, and its posterior coxæ are somewhat more distant. In fact, although assuming the two above-mentioned peculiarities of *Casapus* (and they are most significant ones), it has evidently a greater affinity with the last genus,—to which in external contour and size, no less than in the subdentate fasciæ with which its elytra are adorned, and the stiff erect hairs with which it is everywhere beset, the Grand Canarian *P. inconstans* (which I regard as the type) makes a most decided approach; nevertheless its costate pronotum and the subcostate base of its elytra, in conjunction with its undistinguishable scutellum, its more pubescent and emarginated upper-lip, its acuter mandibles (at all events of the *P. inconstans*), which are constructed like those of the ordinary *Ptinidæ*, the longer and narrower process of its maxillary *stipes* and the *incrassated first-joint of the hinder tarsi of its male sex*, will at once separate it from *Piarus*.

§ I. *Corpus squamosum et setosum; mandibulis apice acutis* (ut in *Ptinis typicis*).

13. *Piotes inconstans*, n. sp. (Pl. VIII. fig. 8.)

P. nigra vel piceo-nigra; capite prothoraceque dense flavescenti-cinereo-squamosis, hoc postice leviter 4-nodoso-costato; elytris ovalibus, striato-punctatis, subnitidis, pilis plus minus rigidis, plus minus erectis, plus minus elongatis, plus minus dense obsitis, fasciis duabus magnis dentatis [sc. sub-basali et postmediâ] necnon apice albidis (plus minus distinctis vel inter se suffusis) ornatis; antennis pedibusque robustis, ferrugineis, squamosis.

α. elytris setulis brevibus subdemissis dense tectis, fasciis plerumque sat distinctis.

β. [*vide* fig.] elytris pilis rigidis longiusculis erectis dense tectis, fasciis plerumque sat distinctis.

γ. *lanata* [an species vera?] elytris pilis mollibus valde elongatis

erectis sat dense tectis, fasciis plerumque minus distinctis, interdum fere omnino confluentibus suffusis obsoletis.

Long. corp. lin. $1\frac{1}{8}$—$2\frac{2}{3}$.

Habitat sub lapidibus in ins. Canariâ Grandi, rarissima: status α et β ad Maspalomas et Arguineguin deprehensi, sed γ ad arenosos juxta Las Palmas pertinet.

After a careful examination of many specimens of this insect, I have been forced to the conclusion that variability in the *length* and *thickness* of the hairs with which its elytra are beset, no less than the inconstancy of its fasciæ, form (in combination) one of its characteristic features. As regards the greater or less development of its elytral markings (which, although in some examples well-defined and bright, are in others entirely lost sight of, and suffused *inter se*) there is nothing remarkable, for the whole of these fasciated *Ptinidæ* are eminently unstable in this respect; but I am not aware of any other instance in which the *erect hairs* which stud the elytra are so extremely variable as they are in the present species. In fact, were I not able *almost* to complete the passage between the three states indicated above, I might have regarded them as specifically distinct; but since such is the case, and since also their *other* characters (apart from the elytral clothing) are nearly identical, I cannot but consider them as mere phases of each other. As regards the first two of them, however (α and β), they certainly are not *local* forms, for I have taken them in company; neither are they sexual, for they are equally indicated in both males and females; but with respect to the third (γ) there is a possibility that it *may* be a geographical state, since I have hitherto observed it in only one locality (the sandy region between Las Palmas and Puerto da Luz of Grand Canary), and unmixed. The whole three of them seem to be peculiar to Grand Canary—where, in April, 1858, I took the α and β beneath stones in the vast sandy tract at Maspalomas (in the south of the island), as also at Arguineguin: whilst the γ (as just stated) occurs in similar spots between Las Palmas and the Isleta, in the north.

§ II. *Corpus squamosum (nec setosum); mandibulis apice paulo magis obtusis.*

14. *Piotes vestita*, n. sp. (Pl. VIII. fig. 9.)

P. nigra, squamulis fuscis demissis ubique densissime vestita; prothorace costis discalibus duabus valde elevatis (lateralibus

obsoletis) notato, angustulo, lateraliter compresso; elytris ovalibus, striato-punctatis; antennis pedibusque elongatis, robustis, ferrugineis, squamosis.

Long. corp. lin. $2\frac{1}{3}$.

Habitat sub lapidibus in ins. Palmâ, rarissima.

The great size of this species, which is concolorous throughout (being densely clothed with decumbent pale-brown scales) and is quite free from erect hairs, in conjunction with its small, narrow, laterally-compressed prothorax (which has two considerably elevated ridges down its disk, but the external ones obsolete), will readily distinguish it from the other members of the *Ptinidæ* here described. In general outline, both of prothorax and elytra, no less than in the bicostate surface of the former, the total freedom of the latter from additional pile, its large bulk, the slight *tendency* which its elytra possess to have obscure subsetulose ridges at their base, and the enormous development of the first-joint of its hinder male-feet, it has much in common with the *Casapus subcalvus* from Hierro; and indeed the fact that the latter insect is somewhat aberrant in its group (having not only indications of minute *scales* on its elytra, instead of hairs, but likewise the extreme apex of its labial palpi *almost* entire) would perhaps render this relationship the more striking; nevertheless, every point duly considered, I think there can be no doubt but that the present species has (despite its unpilose body and *sub*-obtuse mandibles) *more* in common with the type of *Piotes* than it has with the aberration from the type of *Casapus;* though, as implied at the commencement of this memoir, it may be said to bring us almost back again to the forms with which we started.

The *P. vestita* appears to be extremely rare, the only two specimens which I have seen having been captured by myself in the island of Palma during June, 1858—one high up in the Barranco above Santa Cruz, and the other in the laurel-woods above Buenavista on the ascent to the Cumbre.

XII. *Descriptions of New Species of the Genus* Bassus. By Thomas Desvignes, Esq.

[Read 1st July, 1861.]

Having already given a list of indigenous *Bassi,* in the Catalogue printed for the British Museum, I do not think it necessary to recapitulate them here; their descriptions are accurately given by Grav. Vol. III. Ich. Eur. pp. 312—357. The following I consider to be eleven new distinct species, and have, therefore, ventured to describe them as such. The females in this sub-genus of the family of the *Bassi* vary:—thus the apex of the abdomen in some species is but little compressed, in others the remaining segments from the second are completely so, forming, as it were, a narrow dorsal ridge—but the males are mostly similar to one another in their habits, and probably from this fact Gravenhorst did not think it necessary to form another sub-genus.

New species described:—

Bassus rufocinctus, D.
„ *maculatus*, D.
„ *picitans*, D.
„ *scabrosus*, D.
„ *albicinctus*, D.
„ *frenator*, D.
„ *thoracicus*, D.
„ *flavus*, D.
„ *planus*, D.
„ **compressus*, ♂ (♀ B. M. C. 91—19).
„ *pulchellus*, D.
„ *elegans*, Grav. ♂
„ * „ ♀ D.

Bassus rufocinctus.

Segmentis 1 et 2 crebre punctatis, 2—5 rufo-marginatis; coxis et femoribus nigris, tibiis et orbitis oculorum internis flavis, scutello nigro.

Long. 2—2½ lin. ♂ et ♀.

Head—apex of mandibles and the inner orbits of the eyes, extending above and a little below the antennæ, yellow. *Antennæ* filiform, more than half the length of body. *Thorax* gibbous, with a line before and a small dot at the base of wings yellow.

Wings hyaline, with a very faint tinge of yellow; base and stigma pale, the latter slightly cloudy. *Legs*—coxæ and trochanters black, the first and second pairs of the latter sometimes yellow at their apex; first pair of femora pitchy fulvous at the base, paler at the apex, second pair black at the base, sulphur colour afterwards; hinder femora black, the extreme apex fulvous; all the tibiæ yellowish, the tarsi fuscous.

Abdomen depressed, first segment sessile-quadrate, the second broader than the first, both deeply punctate, a slightly impressed line on each, the remainder punctate; the margins of second to fifth segments chestnut red; apex of female sub-compressed; aculeus sub-exserted.

Allied to *B. multicolor*, Grav.

Bassus maculatus.

Segmentis mediis rufis nigro-maculatis; pedibus fulvis, coxis et trochanteribus flavis, posticis basi nigris; ♂ facie, genis, picturis thoracis et pectoris flavis; ♀ ore et maculâ fere dimidiatâ infra antennas flavis, abdomine e segmento 2° compresso.

Long. 2—$2\frac{1}{4}$ lin.

Head—face, cheeks and frontal orbits of the ♂ yellow, the former distinctly protuberant longitudinally; female with a yellow dot nearly double just below the antennæ. *Antennæ* shorter than the body, filiform, the last joint slightly acuminate; of the ♂ beneath yellow; ♀ towards the base pale ferruginous, second joint at the extreme base black. *Thorax* more cylindrical than gibbous, a line before, a dot at the base and another adjoining beneath the wings, yellow; the ♂ has besides a yellow band extending from below the wings to the breast behind the first pair of coxæ, and also a yellow dot on each side of the collar. *Scutellum* black. *Wings* hyaline; stigma and base pale; the costa fuscous. *Legs* fulvous; coxæ and trochanters yellow, the hinder pair black at the base, a blackish streak beneath the posterior femora of the ♂; tibiæ pale fulvous, and the tarsi rather darker. *Abdomen* ♂ — 1st and 2nd segments black, the margin of the latter and 3rd—5th segments rufous or chestnut; 3rd—5th with a large, central, somewhat triangular black patch. ♀ black, the sides of the 2nd—5th entirely red or chestnut, from the apex of the 2nd much compressed, forming, as it were, a narrow ridge on the back; aculeus very short, curved upwards.

Bassus picitans.

Segmento secundo puncto laterali obscuro-ferrugineo, pedibus fulvis, coxis nigris; ♂ orbitis oculorum internis et macula faciei flavis; ♀ ore, clypeo, et puncto faciali flavis, areola oblique quadrata.

Long. $1\frac{3}{4}$—2 lin.

Rather smaller than *B. pictus.*

Head—face with the internal orbits, a central spot, mandibles and labrum, yellow; ♀ mouth and a small central dot paler yellow. *Antennæ* filiform, longer than half the body; 1st joint beneath yellow. *Thorax* with a line before the wings, and a narrower one under, yellow. *Wings* hyaline; stigma and base pale; areolet obliquely 4-angular. *Legs*—coxæ and trochanters black, their apex sometimes yellowish, or with a paler dot; femora fulvous beneath, more or less dusky towards the base in the ♂, extreme tip of hinder tibiæ and the tarsi obscure. *Abdomen*—the lateral margins of the 2nd segment with an obscure ferruginous dot; 1st and 2nd segments opaque; the apex of ♀ very slightly sub-compressed; aculeus exserted, stout, short.

Bassus scabrosus ♂.

Mas.—Segmentorum marginibus tuberculatis; segmento primo lineis duabus elevatis, segmento 2° lineis tribus depressis; abdomine toto punctato, præsertim segmentis 1° et 2°; pedibus anterioribus flavis; coxis et tarsis posticis nigris, femoribus rufis; scutello, facie et picturis thoracis et pectoris flavis; areola petiolata.

Long. 4 lin.

Head—face, mouth and cheeks, and a portion of the inner orbits above the antennæ, yellow. *Antennæ* not so long as the body, setaceous; first joint beneath yellow; the articulations towards the base longish, and testaceous beneath, gradually darker towards the apex. *Thorax* gibbous, a triangular patch before the wings, below this a perpendicular one broadest at its base, a line below the wings, a pectoral one behind the first pair of coxæ extending upwards, and two large spots before them on the lower part of the collar; a sutural line between the metathorax and mesothorax, and a line below the scutellum, yellow. *Scutellum* yellow. *Wings* smoky hyaline; costa and stigma black, base yellow; areola triangular, petiolated; the inferior nervure of the first cubital cellule slightly arched, but not angulated. *Legs*—Anterior coxæ yellow; femora pale fulvous: hinder coxæ black; apex of trochanters yellow; femora red; all the tibiæ pale fulvous, the apex

of the hinder pair and tarsi black. *Abdomen* longer than the head and thorax, deeply punctured; first segment with two elevated lines meeting before the apex, somewhat shining; second segment with three longitudinal furrows; all the margins tuberculated, less so towards the apex; the first segment a little broader at the base than at the apex, sessile, the sides straight.

Bassus albicinctus.

Segmentis 2° et 3° marginibus lateralibus albis, tertio medio ferrugineo; pedibus pallide fulvis, coxis flavis, posticis fere totis nigris, tarsis et apice tibiarum fuscis; facie, parte genarum, scutello et picturis thoracis flavis.

Statura fere omnino *B. albosignati*, Grav.

Long. 3 lin.

Head—face and a portion of cheeks and mouth yellow; apex of mandibles ferruginous. *Antennæ* beneath piceous, first joint yellow. *Thorax*—a transverse line below the scutellum, an angular broad line before, another at the base, also one below the wings, a perpendicular one extending to the breast, behind the first pair of coxæ, and two large round spots before them, yellow. Scutellum yellow. *Wings*—stigma large, and costa black or pitchy; scales pale. *Legs* palish fulvous, or rather reddish; first and second pair of coxæ and all the trochanters yellow: hinder coxæ black, pale at the apex; hinder tarsi and apex of tibiæ fuscous. *Abdomen* depressed, as broad as the thorax, the third segment broadest, first segment with two elevated ridges, the lateral margins also slightly raised; the margin of the second white, with a tinge of red intermixed, the lateral or apical margins of the third white, the space between them light chestnut; first to third rugose or deeply punctured, the remainder much less so and shining; extreme margin of the fifth whitish.

Note.—Allied to *B. albosignatus*, but very distinct: the description is of a male insect.

Bassus frenator.

Pedibus fulvo-rufis, coxis anterioribus flavis, tibiis posticis, plus dimidiatim, et tarsis atris, illis basi albis; scutello apice, et freno flavis; metathorace tumidulo plano; pectore et coxis posticis rufo-flavo variegatis (mas—facie, quoque articulo 1° antennarum flavis).

Statura *B. pectoratorii*, Grav., sed abdomine absque lineis impressis.

Long. 3 lin.

Head—face, mouth and a small portion of cheeks whitish yellow. *Antennæ* filiform, longer than half the body; beneath testaceous; first joint whitish yellow, base of second blackish. *Thorax*—a line slightly curved before the wings, two united below the first pair, a sutural dot below the second pair, and the collar before the first pair of coxæ, pale yellow; sides of breast red, tinged with yellow. Frenum and apex of scutellum of the same colour. *Wings*—nervures and stigma pitchy; scales pale; areolet small, sub-triangular, petiolated. *Legs* above fulvous yellow, paler beneath; anterior coxæ and all the trochanters pale straw-coloured; posterior coxæ pale red; hinder tibiæ before the middle and tarsi deep black; one-third from the apex of the former white. *Abdomen* as broad as the thorax, deep black; first segment with a deepish central furrow; first and second segment nearly opaque, the remainder smoother.

This insect is somewhat like *B. pectoratorius*, but differs in having no impressed lines on the abdomen, which is also much smoother.

Bassus thoracicus.

Pedibus sub-castaneis, tarsis posticis et apice tibiarum nigris; pectore et lateribus metathoracis semiustulato-rufis; picturis thoracis, marginibus scutelli et lineis duabus sub scutello pallidis; ore et lineâ mediâ faciei flavis.

Statura et proportio *B. picti*, Grav., (areolâ simile).

Long. $2\frac{1}{4}$ lin.

Head—palpi, mandibles and a central facial line pale. *Thorax*—a line before, a dot, also a line below the wings, pale; below the wings, and a spot on the sides of metathorax, burnt-reddish colour; the breast with a central obscure patch, two pale lines below the scutellum. *Scutellum* itself black, the outer margins with two angular pale dots. *Legs* pale chestnut-red; hinder tibiæ cloudy-white; the apex and tarsi black. *Wings*—areolet oblong, outwardly a little bent; stigma and base pale, costa and nervures darker. *Abdomen* opaque; 2nd segment slightly aciculated at the base; 6th segment beneath protruding.

Bassus flavus ♂.

Mas.—Corpore subtus toto flavo; oculis, occipite et tarsis posticis nigris; scutello magno flavo; segmentis abdominis glauci-marginatis; segmento 1° thorace angustiore, lateribus rectis; areolâ parvâ petiolatâ.

Long. $2\frac{1}{2}$ lin.

Head—eyes and occiput and forehead black. *Antennæ* beneath pale yellow, obscurer towards the apex, black above. *Thorax* with a broad line before, one at the base, joined to another below the wings, yellow. *Scutellum* large, elevated, subcordate, also a line below yellow. *Wings* hyaline; stigma fuscous, base broadly pale; areolet petiolated, small, triangular, the external nervure rather indistinct. *Legs*—hinder femora somewhat fulvous; the apex of posterior tibiæ and tarsi black. *Abdomen*—the first segment narrower than the thorax, its sides straight, the remainder as broad, with their margins glaucous or pale white.

Bassus planus.

Pedibus rufis; tibiis posticis albidis apice, et tarsis nigris. ♂ facie, antennis subtus flavis, coxis anticis pallidioribus; ♀ ore et puncto faciali sub-stramineis, areolâ obliquâ sessili.

Statura omnino *B. picti*, Grav.

Long. 3 lin.

Head—mouth and face of the ♂ yellow; ♀ mouth and a facial dot paler. *Antennæ* longer than half the body, filiform or subsetaceous; ♂ beneath yellow. *Thorax* with a narrow yellow streak before the wings. *Wings* smoky hyaline; stigma fuscous, base and scales pale; areolet oblique, 4-angular, sessile. *Legs* red; anterior coxæ and trochanters paler, more so in the ♂; hinder tibiæ whitish, their apex black, also the hinder tarsi. *Abdomen* of the ♂ not so broad as the thorax, the sides parallel; ♀ subfusiform; 1st and 2nd segments finely aciculated, the remainder more glossy, but slightly canescent.

B. compressus, ♂. (B. M. C. p. 91—19, ♀.)

Mas.—Facie toto et articulo primo antennarum subtus flavis, reliquis ferrugineis; picturis thoracis et pectoris flavis, coxis anterioribus flavis; abdomine lineare; segmentis 1° et 2° et basi 3ⁱ punctatis scabris, reliquis nitidioribus.

Head—face and the lower part of cheeks yellow. *Antennæ*—first joint beneath yellow, the remainder ferruginous. *Thorax* gibbous, a broad hooked line before, a dot at the base and a line below the wings yellow; also a sutural line encircling the breast, behind the first pair of coxæ, of the same colour. *Wings* as in ♀. *Legs* as in ♀, but the anterior coxæ yellow. *Abdomen* linear; 1st, 2nd and base of 3rd segments scabrous, punctate, the remainder glossy; very near the base of 3rd segment is a short depressed line.

Bassus pulchellus.

Abdomine tricolore; segmentis intermediis rufo et viride marginatis; pedibus testaceis aut pallide fulvis; coxis et trochanteribus albo-flavis, illis posticis subtus maculâ nigrâ; femoribus posticis fulvis, subtus basi summo fuscis; tarsis obscuris; scutello, picturis thoracis et pectoris flavis; facie, genis et articulo 1° antennarum subtus flavis, sequentibus testaceis.

Long. $2\frac{1}{2}$—3 lin.

Statura et proportio omnino *B. Exsultantis*, Grav.

Head—mouth, face and cheeks yellow; apex of mandibles slightly ferruginous. *Antennæ* filiform, shorter than the body; 1st joint beneath yellow, the remainder testaceous. *Thorax* gibbous, a hooked broad line before, a dot at the base, a line below the wings, a spot below the scutellum, a longitudinal line between the first and second pair of coxæ, another encircling the breast, yellow. *Scutellum* yellow. *Wings* hyaline; stigma pale cloudy; scales yellow. *Legs* pale yellow; hinder femora dilute-fulvous; tarsi dusky, coxæ and trochanters whitish yellow; the hinder coxæ with a black spot beneath. Femora also at the extreme base fuscous. *Abdomen*—1st segment linear, finely punctate, the remainder broader than the first, but equilateral; 2nd segment more or less black, its margin red; 3rd red, sometimes rather cloudy, its margin greenish; the remainder black, their margins glaucous.

Note.—Closely allied to *B. Exsultans*.

B. elegans ♀. (♂ Grav. Ich. Eur. Vol. II. p. 313.)

Abdominis medio rufo; pedibus fulvis; ♂ coxis et trochanteribus nigro flavoque pictis; ♀ coxis obscuro nigris fere badiis; tarsis posticis nigris ♂ et ♀; ♂ facie flava, ♀ nigra macula rufa aut ferruginea; ♂ picturis thoracis flavis; ♂ et ♀ scutelli margine apicali flava, interdum punctis duobus flavis; areola oblique rectangulari subsessili.

Long. $2\frac{1}{2}$—3 lin.

Head—♂ mouth, face and cheeks yellow; ♀ face black, with a central ferruginous or yellowish spot; mouth pale. *Antennæ*—♂ 1st joint beneath yellow; ♀ dark brown entirely. *Thorax*—♂ a line before the wings, a smaller one beneath, a lateral spot on the collar, the lateral suture between the prothorax and metathorax, also a longitudinal line on each side of the breast, yellow; ♀ a line before the wings only, the rest of the thorax black. *Scutellum*—

the apical margin yellow, obsolete, or with only two small apical dots. *Wings*—stigma and costa fuscous, the former somewhat paler. *Areolet* oblique, rectangular, subsessile. *Legs* fulvous; ♂ anterior coxæ yellow, base black; hinder ones black; the apex of trochanters yellow; ♀ coxæ and trochanters chestnut black; the apex of the latter yellowish; ♂ and ♀ hinder tarsi black. *Abdomen* ♂; 1st and 2nd segments, scabrous; 2nd, at the apex mostly fulvous; 3rd, red or fulvous; 4th, seldom entirely red, generally with a black basal fascia: ♀, broad as the thorax, the margin of 1st segment red; 2nd not black at the base; 4th segment sometimes with a black marginal fascia; 5th—7th glossy; the apex scarcely sub-compressed; aculeus very short, thick, distinct.

Var.—1st segment entirely black.

XIII. *A few Words on the Synonymy of* Laverna Langiella. By H. T. Stainton, Esq., F.L.S.

[Read 7th October, 1861.]

Few insects are more conspicuous and striking than *Laverna Langiella*, but few have had a more embarrassed and complex synonymy. My first acquaintance with the insect arose from an un-named specimen in the collection of James Francis Stephens; this was found to agree very well with Hübner's figure of *Langiella*, but, on referring to Treitschke's description, I noticed the words "die Fühler schwarz und weiss geringelt;" and as the insect before me had unicolorous dark antennæ, I did not venture to pronounce it identical with the *Langiella* of Treitschke, and therefore described it in my "Catalogue of British Tineidæ" as *Niveipunctella*, n. sp. Subsequently I ascertained that our insect was undoubtedly the continental *Langiella*, and not a new species closely allied to it, and that the discrepancy in Treitschke's description was an error. Schläger in the "Tauschvereinsbericht" for 1847 had recorded the habit of the larva, and in my volume of the "Insecta Britannica" I drew attention to this, calling the insect by the Hübnerian name of *Langiella*.

Unfortunately errors are not altogether disposed of when we discover our own mistakes and correct them, for others may already have adopted them and may not feel disposed lightly to part with them. I was accordingly horrified to find figured on Herrich-Schäffer's 118th plate of Tineides, as two distinct species, *Langiella* and *Niveipunctella*. The text, however, made the subject still more perplexing, as the figure of *Niveipunctella* was referred to as the representation of *Langiella*, and the figure of *Langiella* was referred to as the representation of a new species, *Fulicella* of Heyden, having a slight difference in the form of the white spot.

Frey in his Monograph of the genus *Laverna*, in the 14th vol. of the "Linnæa Entomologica," places *Fulicella* after *Langiella* as a species unknown to him and rather problematical.

Fortunately Von Heyden was able to come to the rescue, and by a short notice in Herrich-Schäffer's "Correspondenzblatt," vol. i. p. 22, to explain the origin of his *Fulicella*. This was briefly as follows:—

In his copy of Hübner the figure of *Langiella* did not agree well with the insects he had bred from *Epilobium*, and hence he

had concluded these were a new species, and named them *Fulicella*. In 1839 he sent specimens of these *Fulicella* to Fischer von Röslerstamm, who wrote back that he did not consider them distinct from Hübner's *Langiella*, and Von Heyden, having satisfied himself that this opinion was correct, sunk the name *Fulicella* in his collection. It was from the specimens sent by Von Heyden to Fischer von Röslerstamm, under the name of *Fulicella*, that Herrich-Schäffer constituted this new species in his "Schmetterlinge von Europa;" thus, in a complicated way, perpetuating an error of Von Heyden's, and one of my own,—for I fear many will yet puzzle over his two species who will not meet with this explanation.

Last week, when referring to a Berlin periodical, published in 1794, for a description of the larva of *Gracilaria stigmatella*, referred to by Schrank in his "Fauna Boica," I stumbled on a description of this insect, with the habit of the larva and figure of the mined leaf, larva and imago, under the name of *Alucita Epilobiella;* this was from the pen of Römer, and it appears in the 11th volume of the "Schriften der Gesellschaft naturforschende Freunde in Berlin," p. 162, pl. 3, fig. 1—5. Von Heyden had called attention to this notice of Römer's in his short paper in the "Correspondenz Blatt," and to its having been completely overlooked by modern writers; but I had not observed his remark till after unearthing the old observation. Not unfrequently after making a discovery, one finds it was already previously known. *Epilobiella* would be the oldest name for the species, but is already preoccupied in the genus, if the *Epilobiella* of the "Wiener Verzeichniss" is to stand; but the sole description there given, "Weidrichsroschen Raupe (*Epilobii hirsuti*), Weidrichsroschen Schabe, *Tinea Epilobiella*," would apply to nearly the whole genus *Laverna*, and I have never been able to find a sufficient "standpunkt" in this description to apply it firmly to any one species. The oldest description for our present *Epilobiella* to which I refer is that of Schrank, in his "Fauna Boica," which is nine years later than Römer's paper; and if this view be correct, the name *Epilobiella* should now be applied to *Langiella*, and for the *Epilobiella* of Schrank, the next oldest name of *Fulvescens*, Haworth, would fall to be adopted.

The synonymy of the two species would then stand thus:—

Alucita Epilobiella—

Römer, Berlin. naturf. Schriften, xi. p. 162, pl. 3 (6), fig. 1—5, 1794.

Tinea Langiella—
Hübner, Samml. Europ. Schmett. fig. 187.
Elachista Langiella—
Schläger, Tauschv.bericht, 1847, p. 221.
Treitschke, Schmett. v. Europa, ix. 2, p. 178.
Anybia Langiella—
Stainton, Ins. Brit. Lep. Tin. p. 245.
Laverna Langiella—
Frey, Tineen u. Pteroph. der Schweiz, p. 280.
Linn. Ent. xiv. p. 196.
Mompha Langiella—
Herrich-Schäffer, Schmett. v. Europa, v. p. 208, fig. 965.
Heyden, Correspondenz Blatt, i. p. 22.
Elachista niveipunctella—
Stainton, Cat. Brit. Tin. p. 25.
Herrich-Schäffer, Schmett. v. Europa, v. fig. 966.
Mompha Fulicella—
Herrich-Schäffer, Schmett. v. Europa, v. p. 209.
Laverna Fulicella—
Frey, Linn. Ent. xiv. p. 197.

And—
Recurvaria Fulvescens—
Haworth, Lep. Brit. p. 554, 1829.
Anacampsis Fulvescens—
Stephens, Illust. Haust. iv. p. 215.
Tinea Epilobiella—
Schrank, Fauna Boica, ii. 2, p. 126, N. 1853.
Bouché, Garten Insecten, p. 118; Naturgeschichte, p. 126.
Œcophora Epilobiella—
Treitschke, Schmett. v. Europa, x. 3, p. 208.
Fischer von Röslerstamm, p. 206, pl. 73, pl. 74, fig. 1.
Laverna Epilobiella—
Stainton, Ins. Brit. Lep. Tin. p. 238.
Frey, Tineen u. Pteroph. der Schweiz, p. 281.
Linn. Ent. xiv. p. 191.
Herrich-Schäffer, Schmett. v. Europa, v. p. 210.
Cleodora nebulella—
Stephens, Illust. Haust. iv. p. 221.
Curtis, Brit. Entomology, folio 671.

XIV. *Descriptions of two New Species of* Ephialtes. By Thomas Desvignes, Esq.

[Read 4th Nov. 1861.]

Ephialtes facialis, n. sp.

Facie, articulo 1° antennarum subtus, coxis anterioribus, pleuris, maculâ magnâ triquetrâ, et lineis duabus ante alas, flavis; femoribus, tibiis, et coxis posticis fulvis, tarsis fuscis; segmentis abdominis elongatis, planis, penultimo quadrato.

Long. 5—5¼ linearum (mas).

Head—face and mouth yellow. *Antennæ* two-thirds the length of body; first joint beneath yellow, the following pitchy but gradually lighter towards the apex, which is nearly ferruginous. *Thorax* gibbo-cylindrical; two streaks before the wings, another below, a large triangular spot on the pleuræ adjoining the breast and two round ones before the first pair of coxæ, yellow. *Wings* sub-ample, their base straw-coloured; stigma and costa darker, areolet sessile or sub-petiolated. *Legs* fulvous; the anterior coxæ and trochanters yellow; hinder ones fulvous, with a paler, undefined streak beneath; trochanters above and tarsi fuscous. *Abdomen* cylindrical; from the 1st to 5th segment elongate, the 6th quadrate, the margin of the second segment most elevated.

Specimens taken by F. Walker, Esq.

E. albicinctus, n. sp.

Facie, articulo 1° antennarum subtus, coxis anterioribus, trochanteribus totis, et tibiis posticis introrsum albis, extrorsum tarsisque fuscis; pedibus anterioribus stramineo-fulvis, posticis fulvo-rufis; basi tibiarum posticarum et articuli primi tarsorum posticorum albis; segmentis 1 et 2 elongatis, reliquis sub-quadratis; segmento 1° sessili, canaliculato, aut duabus lineis elevatis.

Long. 3⅗ linearum (mas).

Head—face, facial orbits and mouth pale, with a very slight reddish tinge. *Antennæ* sub-setaceous, a little longer than half the body; 1st joint beneath white or pale, the remainder testaceous, above darker. *Thorax* cylindrical, with a yellowish line before the wings. *Wings* pale at the base; stigma rather large, darker; costa towards the apex darker; areolet rhomboidal, sessile. *Legs*—the anterior ones pale straw-colour, their coxæ and all the trochanters paler or whitish; the hinder coxæ and femora fulvous;

tibiæ and tarsi fuscous; more than the basal half of the former within pale, with their apex fuscous, outwardly forming a ring at the base; the base of the first joint of the hinder tarsi white, that of the second and third indistinctly so. *Abdomen* sessile, sub-linear; 1st segment with two ridges forming a channel between them; 3rd and remainder covered with a short hoary pubescence; 1st—3rd elongate, the rest sub-quadrate.

Taken by F. Walker, Esq.

XV. *Note on the* Strongylorhinus ochraceus *of Schönherr, and Descriptions of two nearly allied Species of* Curculionidæ, *from Australia.* By G. R. Waterhouse, Esq., F.Z.S., &c.

[Read 4th Nov. 1861.]

The following notes and descriptions refer to three species of *Curculionidæ*, from Australia, which were exhibited at the Society's meeting. One of these insects is supposed to be the *Strongylorhinus ochraceus* of Schönherr; the other two are regarded as members of a new genus, about to be characterized under the name *Atelicus*.

Strongylorhinus ochraceus, I believe, has never been described, but the insect exhibited is from the same locality (Tasmania) as that given by Schönherr for his *St. ochraceus:* it agrees not only with the generic characters laid down in the "Mantissa Secunda" at p. 65, but likewise in the general colouring (as may be inferred from the specific name) and in the following points, noticed in the generic description, but which, in part, must be regarded as specific, viz.—"*corpus oblongum, sub-cylindricum, convexum, sculpturatum, squamosum, alatum; mediæ magnitudinis* * * *. *Elytra basi thoracis parte postica parum latiora illoque plus triplo longiora, linearia, basi singulatim valde producta, singulo elevato-bilobata, humeris obtuse angulatis; lateribus rectis, apicem versus attenuato-rotundata.*" It is *extremely* probable, then, that this is the *St. ochraceus* of Schönherr. The insect is 6 lines in length, not including the rostrum; covered throughout with reddish-ochreous

scales, the scales assuming a darker, and somewhat brownish hue, in some parts than others: the brighter coloured scales form three longitudinal bands on the thorax, and a transverse band rather below the middle of the elytra, which is considerably dilated and bent forwards at a short distance from the suture. These bands are by no means well defined; and other parts are somewhat variegated by a mixture of lighter and darker scales. The rostrum is about equal to the head in length, is finely punctured, and destitute of scales in front. The head presents a shallow depression between the eyes, and has some scattered punctures. The thorax shows a short carina behind, is pretty strongly but not very thickly punctured on the parts clothed with the darker coloured scales, but less distinctly punctured on other parts. The elytra are punctate-striate, the punctures strong and for the most part closely approximated on the basal half of the elytron, but smaller and more or less remote on the hinder half.

The two insects next to be noticed, are without doubt very closely allied to the species just described, differing chiefly in having the rostrum curved instead of being straight, in the antennæ having the seventh joint of the funiculus confounded with the club joints, and in the second joint being short; and, lastly, in the total absence of claw-joint to the tarsi. Here the large, dilated, third joint of each tarsus is entire, showing neither the apical notch, nor the groove on the upper surface, which is seen in the corresponding joint when a claw-joint is present; but it must be remarked that in *Strongylorhinus* the claw-joint is already extremely small.

Fam. ERIRHINIDÆ.

Genus Atelicus.

Antennæ breves, subtenues, thoracis apicem vix superantes, in medio rostri insertæ; scapo brevi, oculos non attingente; funiculo 6-articulato, articulo primo longiusculo, obconico, reliquis brevibus; clava elongata, acuminata.

Caput paullo exsertum, conicum: oculi laterales, rotundati, parum convexi.

Rostrum capite paullo longius, teres, arcuatum.

Thorax antice truncatus, postice bisinuatus, lateribus basi subrectis, intra apicem constrictus, infra pone gulam leviter emarginatus.

Scutellum minutum.

Elytra elongata, basi singulatim rotundata, apice conjunctim rotundata, anum obtegentia.

Pedes validiusculi; femoribus parum clavatis; tibiis brevibus, intus sinuatis; tarsis triarticulatis, latis, subtus spongiosis: articulo tertio fere rotundato.

Corpus oblongum, sub-cylindricum, alatum.

Sp. 1. *Atelicus inæqualis.*

At. oblongus, nigro-piceus, dense ochraceo-squamosus, fuscoque variegatus; fronte foveolato; thorace lateribus parum rotundato, antice constricto, punctato: elytris oblongis, striato-punctatis, interstitiis alternis inæqualiter elevatis, postice quadri-tuberculatis, antice scutellum versus elevato-productis..

Long. corp. absq. rostr. $5\frac{1}{4}$ lin.

Hab. Tasmania.

Rather smaller, and proportionately rather shorter, than *Strongylorhinus ochraceus.* Head, with its nearly round and depressed eyes, rather remote from the thorax; convex above, with a shortish, deep groove between the eyes, and some scattered punctures, and clothed (like the base of the rostrum) with brownish ochraceous scales: rostrum rather stout, nearly cylindrical, distinctly curved, and about one-third longer than the head; the anterior denuded part pretty thickly and distinctly punctured. Antennæ piceous: the seventh joint of the funiculus gradually enlarged to the apex and continuing the outline as it were of the club, so as to appear part of it; the elongated club thus appears to consist of five nearly equally distinct joints. Thorax rather broader than long, the sides slightly rounded, but strongly constricted at the anterior third, the surface uneven, there being a slight callosity above towards the sides (immediately behind the constricted portion), and two indistinct transverse risings between the sublateral callosities and the mesial line. The scales covering the thorax are chiefly brown on the upper surface (if we except a slender pale mark along the centre), and chiefly palish ochraceous on the sides and under parts; the surface is pretty thickly and distinctly punctured. The elytra are about one-fourth broader than the thorax, and twice and a half the length; their sides are nearly parallel; the apex rounded; in the usual places of the striæ are rows of smallish ocellated punctures; the scales elsewhere are round, but in each puncture is a single oblong whitish scale: the alternate interstices are irregularly raised; the third interstice is not elevated at the base of the elytra, but at a short distance from the base it

is most raised; thence to the apical third it is moderately elevated, but beyond that point it is depressed; the fifth interstice is depressed on the basal third of the elytra, then raised in the middle, and towards the apex of the elytron it is produced into a much-elevated oblong tubercle, as is also the first interstice nearly at the same point, so that the elytra present four sub-apical tubercles, of which the outermost pair are rather the larger, and the innermost pair a little more remote from the apex; at the base, the inner half of each elytron is produced anteriorly into a lobe, which is much incrassated, particularly on the outer side, where it forms a conspicuous tubercle; the humeral angle is also incrassated and raised, but to a smaller degree. With regard to the colouring, the scales which cover the legs and under parts of the body are of a tolerably uniform pale brownish-ochre colour; the upper parts of the body are variegated with similarly coloured scales and others of a dark brown; on the elytra the paler scales predominate on the disc, but in the region of the shoulders, the sides of the elytra, and the sub-apical portion, the darker colour prevails: all the tubercles are dark.

Sp. 2. *Atelicus ferrugineus.*

At. læte ferrugineus, sub-opacus; rostro, thorace lateribus, lineolaque dorsali, humeris, elytrisque singulo apicali, flavo-squamosis; capite, rostro, thoraceque disperse punctatis; elytris striato-punctatis, interstiis angustis, planis.

Long. corp. $2\frac{2}{3}$ lin.

Hab. Adelaide.

In size and form this insect nearly resembles the small European *Lixus*, known as the *L. rufitarsis* of Schönherr: in colour it is of a somewhat deeper red than the *Apion frumentarium*. Although only certain parts of the body appear to be clothed with scales (these being of a yellow colour), I find, upon placing the insect under a microscope, that the apparently denuded parts are covered with scales of the same rounded form as the yellow ones, but agreeing perfectly in colour with the parts they cover. Antennæ ferruginous, with scattered pale scales on the scape. Rostrum rather longer than the head, cylindrical and moderately curved; the antennal groove, lateral and commencing near the middle of the rostrum, runs obliquely backwards and downwards to the lower angle of the eye; when retracted the scape of the antennæ lies completely in the groove; the surface of the rostrum presents distinct scattered punctures, and, excepting at the apex, is clothed with yellow scales. Head punctured, and clothed with

scales like those on the head, and with an indistinct fovea between the eyes; eyes rather remote from the fore part of the thorax, smallish, round and sub-depressed. Thorax with the length and breadth nearly equal, the sides nearly parallel posteriorly, but rounded near the fore part, which is moderately constricted; the whole under surface, the sides, and a slender sub-interrupted dorsal line, clothed with yellow scales; the upper surface with somewhat coarse, scattered punctures. Elytra nearly three times the length of the thorax, and about one-third broader; nearly cylindrical, with oblique and very slightly prominent humeral angles; the apex rounded, striato-punctate; the punctures round and tolerably large; the intervening spaces flat: a small yellow spot is seen on the humeral angle, and at the apex of each elytron is a ring (not quite a true circle) formed of scales of the same colour. The under side of the insect is for the most part clothed with yellow scales, but the sides of the chest and abdomen are of the same red colour as other parts. The legs are well clothed with scales, of a somewhat paler yellow than those on other parts; the under surface of the broad tarsi is clothed with a velvet-like substance; the femora are moderately incrassated near the apex; the tibiæ stout, and very short; the anterior tibia is sub-denticulate, and ciliated on the inner side, and furnished with a hooklet at the apex.

I have seen but one specimen of this insect, which was sent me by my brother from Adelaide.

XVI. *Descriptions of the British Species of the Genus* Stenophylax. By R. M'Lachlan, Esq., F.L.S.

[Read 4th Nov. 1861.]

The genus *Stenophylax* of Kolenati consists of insects which, though of considerable size, have from their great similarity in general appearance, been much confused in collections and books. The separation of the species is, however, not very difficult if a careful examination is made of the anal appendages of the males and the characters there presented, coupled with the variations in the form and markings of the wings; and it may be worth remarking, that in the *Phryganidæ*, where these appendages show any marked differences, there are always other characters by which the species may be separated, although these at first sight may be little apparent. This applies particularly to the appendages properly so called, and not so much to the generative organs and sheaths, which are liable to slight variations and are apt to change their form in drying. In this genus two pairs of these appendages are found, the superior and inferior; these are placed on the extremity of the last abdominal segment, but are not attached to its margins; both pairs are seldom well developed in the same species. Between the superior appendages is an upper pair of sheaths or intermediate appendages; these are usually fine, pointed and divergent. On the underside of the last segment and between the inferior appendages are placed the sheaths proper, which are usually parallel or convergent and between which lies the male organ. In addition well marked characters are sometimes found in the form of the upper margin of the last segment. The females are far less easy to separate, especially old specimens with no history attached to them; they are usually larger than the males. The larvæ, according to Pictet, frequent running waters and construct a straight tubular case of small stones neatly agglutinated together, which is fixed to a large stone or other substance at the smaller end. The perfect insects are of nocturnal habits, coming to light and to sugar placed on trees to attract moths, but may be beaten in the daytime from trees in which they take refuge.

About the earliest reliable descriptions of species in this genus are to be found in a paper by Curtis in the Philosophical Transactions for 1834, intituled "On some Nondescript Species of May Flies of Anglers." He there describes four species which

form part of section *C* of the genus *Limnephilus*. I now distinguish nine well-marked British species.

Owing to the species being so much alike in general appearance the synonymy has become very perplexing. That given here is, as far as English authors are concerned, based upon a careful examination of Curtis's and Stephens's types. In the other synonyms I have availed myself of the information contained in Dr. Hagen's revision of Pictet's species in the "Stettiner Entomologische Zeitung," and of additional information obtained from him during his recent visit.

Stenophylax, Kolenati, Gen. et Sp. Trichop. pl. 1, p. 62, 9, Hagen; *Phryganea*, Auctorum; *Halesus*, Stephens; *Limnephilus*, Curtis, Rambur; *Anabolia*, Brauer.

A. Anterior wings much dilated towards the apex, hind margin parabolic or circular.

S. Vibex, Curt. (Pl. IX. fig. 1.)

Limnephilus Vibex, Curtis, Phil. Trans. 1834, 125, 30 (nec Step. Brauer.)

Antennæ pale reddish ochreous; head and thorax reddish-ochreous, the latter slightly darker on the sides; abdomen entirely ochreous; legs pale ochreous, tarsi darker; anterior wings very pale reddish grey, with numerous small pale yellow spots, which are often confluent, anterior margin as far as the *ramus discoidalis* and inner margin (*area suturalis*) pale yellow, unspotted; a pale spot enclosing the thyridium is scarcely connected with a semilunar spot at the base of the apical cells, these spots vary in size and intensity; posterior wings semi-hyaline, the apex yellowish.

Upper margin of last abdominal segment straight, very slightly notched in the middle; appendices superiores somewhat spoon-shaped, concave internally, the apex and anterior margin rounded and slightly curved, the posterior margin with an indistinct tooth, the margins fringed with rather long distant hairs; appendices inferiores broad at the base, with a slightly projecting point anteriorly, the margins clothed with long hairs; lower sheaths curved inwards at the tips and slightly approximating.

Long. corp. 8 lin.; exp. alar. 20 lin.

Appears to be not very common but widely distributed. I have taken it near London, and specimens are in the following collections, Curtis, locality ?: Dale, from Thorne Moor, York-

shire: Newman, from Leominster?: Parfitt, from Exeter. I have also specimens from Scarborough, and have seen others from the Isle of Wight.

Curtis's types of *S. Vibex* consist of four specimens, viz., one male answering to the above description and two females, which probably also belong here, and one male of *S. striatus*. The description in the "Philosophical Transactions" is very short, and will apply equally well to several species. This species is not in Stephens's collection; his *Vibex* and *hieroglyphicus* are one species, which is not contained in Curtis's collection.

S. hieroglyphicus, Stephens. (Pl. IX. fig. 2.)

Halesus hieroglyphicus, St. Ill. Mand. 6, p. 210, 5; *H. Vibex*, St. Ill. 209, 3; *Anabolia hieroglyphica*, Brauer, N. A. 48, 5, figs. 58, 59; *Stenophylax striatus*, Kol. Gen. et Sp. Trichop. pl. 1, p. 64, 4; *Limnephila striata*, Ramb. Névrop. p. 479, 11; *Stenophylax Vibex*, Hagen, Ent. Ann. 1859, p. 92, 31.

Similar in size and form to the preceding. Antennæ reddish-ochreous; head and thorax reddish-ochreous, the latter darker on the sides; abdomen fuscous above, reddish-ochreous beneath; legs reddish-ochreous; anterior wings pale reddish-grey, thickly sprinkled with small pale yellow spots; the anterior (area costalis) and posterior margins are pale yellow, a large pale yellow spot enclosing the thyridium is connected with a more or less distinct semilunar blotch at the base of the apical cells; veins, especially those of the cubitus, dark; posterior wings sub-hyaline, slightly yellowish at the apex.

Upper margin of last abdominal segment cut off nearly straight, with a slight depression in the centre; appendices superiores concave internally, triangular at the base, deeply notched on the anterior margin, with the apex curved inwards and very acute, the margin darker coloured; appendices inferiores broad, oblique, cut off anteriorly with a tuft of long hair on the margin; lower sheaths with the tips approximating.

Long. corp. 7—8 lin.; exp. alar. 17—21 lin.

In this country the commonest species of the genus, and very widely distributed, appears in May, and continues out for some months.

This may be distinguished at first sight from the preceding species by the pale costal margin being narrower, and the form of the superior appendages is very different from any other. As said before, no original specimens of this species exist in Mr. Curtis's collection, so that this cannot be his *L. Vibex*. The appendages

of *hieroglyphicus* and *Vibex* in Stephens's collection differ in no respect, and the insects otherwise are identical in appearance.

S. striatus, Pict. (Pl. IX. fig. 3.)

Phryganea striata, Pict. Recherch. p. 132, 1, pl. 6, fig. 1; *Limnephilus Vibex*, Curt. Coll. (partim); *Stenophylax striatus*, Hagen, Ent. Ann. 1859, p. 92, 32.

In form similar to the two preceding species, in size somewhat smaller. Antennæ and head pale ochreous; thorax darker at the sides; abdomen dull ochreous; the whole of the underside pale ochreous; legs pale ochreous, with black spines; anterior wings very pale greyish yellow, thickly sprinkled with pale yellow spots, which are usually confluent and sometimes cause the darker ground to show only as irrorations, anterior and posterior margins narrowly pale yellow without spots, veins darker; posterior wings sub-hyaline, slightly yellowish towards the apex.

Upper margin of last abdominal segment overlapping and nearly concealing the superior appendages, rounded and produced in the middle into a long tongue-shaped prolongation, which hangs down and is bent under the last segment, and is thickly set with short black setæ: appendices superiores hidden under the projecting terminal segment, spoon-shaped, rounded and fringed with long hairs on the margin; appendices inferiores broad, very obtusely rounded off and fringed with long hairs; upper sheaths approximating at the tips (in most other species they are divergent); lower pair almost parallel; penis considerably exserted (this occurs in all the specimens that I have seen, otherwise I should have been disposed to consider it more as a condition of an individual, than as characteristic of the species).

Long. corp. 5—7 lin.; exp. alar. 14—18 lin.

I have seen very few specimens, and the only locality that I know for certain to produce it is Leominster, where it has been taken by Mr. Newman, in September. This was one of the species bred by M. Pictet.

In the Entomologist's Annual (1859, p. 92, 32) and Entomologische Zeitung (1859, p. 133, 2), Dr. Hagen considers it probable that an insect, which in Curtis's collection bears the MS. name of *tenebrosus*, may belong here; to me it appears to pertain to the next species. As mentioned before, there is a specimen of *striatus* in his collection under *L. Vibex*.

Pictet gives a long list of references to the authors who are supposed to have described this species, extending back to the time of Aldrovand, or upwards of two hundred years since. To

determine with certainty the particular species intended by almost, if not quite, all of these authors, must be an impossibility. In those that I have had an opportunity of consulting, it is difficult to fix even the generic position of the insect described. Of the two figures referred to, that of Reaumur (Mémoires des Insectes, vol. 3, tab. 13, fig. 8, 9, 11) would seem to be a *Limnephilus* of the sub-genus *Grammotaulius*, and that of Schäffer (Icones Insectorum circa Ratisbonam, tab. 168, fig. 2, 3) may be a *Desmotaulius* or *Anabolia*. Kolenati copies these references almost verbatim in describing his *striatus*, which, from an examination of the types, proves to be distinct from Pictet's.

S. lateralis, Steph. (Pl. IX. fig. 4.)

Halesus lateralis, Stephens, Ill. p. 210, 6; *Halesus latipennis*, Stephens, Ill. p. 209, 4; *Limnephilus tenebrosus*, Curt. Coll.

The anterior wings are broader and more rounded at the apex than in the last three species.

Antennæ and head reddish-ochreous; thorax grey, black at the sides; abdomen greyish-ochreous; legs greyish-ochreous, with black spurs and spines; anterior wings dark reddish-grey, the pale spots smaller and less numerous than in the three last species; margins scarcely paler, with spots and clouds of the ground colour; a spot at the thyridium, and one or two spots (not always present) at the base of some of the apical cells, conspicuously paler in consequence of the dark ground colour; occasionally the ground colour is broken up into numerous small spots, in which case the wings assume an irrorated appearance; posterior wings subhyaline, rather smoky, the apex yellowish.

Upper margin of last abdominal segment produced into a tongue-shaped process (similar to the last species), which is bent under and thickly set with short black setæ; appendices superiores small, rounded, the tips only visible; appendices inferiores broad at the base, with a prolongation upwards, obtusely pointed; lower sheaths curved inwards, parallel at the tips.

Long. corp. 6—8 lin.; exp. alar. 17—18 lin.

Not very common in the neighbourhood of London, appears in June and continues for some months; also in Devonshire, Hertford, New Forest, &c.

The form of the upper margin of the last abdominal segment is very similar to the last species, but this species may be readily separated by its larger size, the rounded apex of the wings and by the form of the inferior appendages. In Stephens's collection the types of his *lateralis* and *latipennis* were labelled by Dr. Hagen

"*pilosus*, Pict.," and in the "Entomologist's Annual" for 1859, p. 93, *pilosa*, Pict., is given as a synonym for this species, but the fact of a Stephensian name taking precedence of one of Pictet's would indicate that there was some doubt about it, and this is further confirmed in the "Stettiner Entomologische Zeitung" for 1859, p. 132, where Dr. Hagen states, that he has seen the true *pilosa* only from Switzerland and Austria, and expresses his uncertainty as to Stephens's species. The figures of the anal appendages of *pilosa* in Brauer's "Neuroptera Austriaca" (fig. 60, 61) do not at all correspond with the appendages of *lateralis*. *Pilosa* is apparently a more hairy insect, so much so that Dr. Hagen says of it "mitunter fast wollig."

S. cingulatus, Stephens. (Pl. IX. fig. 5.)

Halesus cingulatus, Step. Ill. p. 209—2 (nec Brauer).

Antennæ, head and thorax reddish-ochreous, the latter darker at the sides; abdomen blackish, the divisions of the segments ochreous; legs ochreous; anterior wings pale ochreous, immaculate, the veins concolorous, extreme edge of the costa slightly brownish; posterior wings sub-hyaline, apex pale yellowish. Upper margin of last abdominal segment slightly produced, rounded; appendices superiores rather long, furcate, the outer point the longest; appendices inferiores long, thin and cylindrical, pointed upwards, rather obtuse; penis much exserted, the lower sheaths not visible.

Long. corp. $8\frac{1}{2}$ lin.; exp. alar. 18 lin.

"Devonshire in July," Stephens.

Unique in Stephens's collection: a second unset female specimen may also belong here. Readily distinguished from all other British species by the prominent furcate superior appendices and obtusely pointed inferior appendices. In the "Entomologist's Annual" for 1859, p. 93, 34, Dr. Hagen indicates this as probably synonymous with *P. testacea*, Pictet, but he since informs me that the latter species is different. *Limnephilus cingulatus*, of Brauer, N. A. p. 51, 15, fig. 70, 71, is *L.* (*Desmotaulius*) *fumigatus*, Germar, Kolen.

S. latipennis, Curtis. (Pl. IX. fig. 6.)

Limnephilus latipennis, Curtis, Phil. Mag. 1834, p. 125, 31;
Phryganea pantherina, Pict. Recherch. p. 137, 6, pl. 6, fig. 1;
Stenophylax pantherinus, Kol. Gen. et Sp. Trichop. p. 67, 8.

Antennæ unannulated, light brown, basal joint dark brown; head and thorax brown; abdomen brownish-ochreous; legs ochreous, with blackish spines; the whole of the underside of the

body ochreous; anterior wings pale yellow, the veins rather broadly but indistinctly margined with very pale yellowish-grey, a faint appearance of a series of elongated spots in the apical cells; posterior wings sub-hyaline, tinged with yellow, especially towards the tips.

Upper margin of last abdominal segment cut off straight; appendices superiores rather square, deeply notched on the apical margin, forming two points which project beyond the margin of the last segment; appendices inferiores ochreous, long, straight and cylindrical, thickened at the tips, which are intensely shining black; upper pair of sheaths broad, triangular and curved outwards; between the inferior appendages a tuft of long hair conceals the lower sheaths.

Long. corp. 8 lin.; exp. alar. 19 lin.

Of this species I only know of the two type-specimens in Mr. Curtis's collection.

In general appearance not very unlike the last species, but the appendages are very different. A great confusion has arisen as to this and the next species; the inferior appendages are very similar, being clubbed at the tip in both species, but this has the apex of the anterior wings parabolic, whereas in the next they are almost circular. Curtis's types are very pale coloured, and in this respect scarcely agree with Pictet's and Kolenati's descriptions, but, according to Dr. Hagen, the form of the appendages is identical. In the British Museum, Stephens's series of *stellatus* was ticketed by Dr. Hagen as "*pantherinus*, Kol.," but as these insects are identical with *stellatus*, Curtis, and as at that time he had not seen Pictet's types, some error may have occurred.

S. stellatus, Curtis. (Pl. IX. fig. 7.)

Limnephilus stellatus, Curt. Phil. Mag. 1834, p. 125—32; *Halesus stellatus*, Steph. Ill. Mand. vol. 6, p. 210, 7.

Antennæ, head, thorax and abdomen above dark fuscous, almost black, beneath dark brownish red; legs reddish, with black spines; anterior wings more rounded at the apex than in the last species, dark brownish grey, very pilose, with elongate pale spots in several of the cells, and a bilobed spot about the thyridium; two spots beyond the anastomosis, and a series of streaks in the apical cells, also paler: of these markings, the bilobed spot and the two spots beyond are conspicuous, the others usually indistinct and sometimes wanting; posterior wings sub-hyaline, slightly smoky, especially towards the apex.

Upper margin of last segment cut off straight; appendices superiores small, concealed; appendices inferiores straight, thin

and almost cylindrical, the extreme apex thickened, black and shining; upper pair of sheaths triangular, long, widely divergent.

Long. corp. 5—6 lin.; exp. alar. 14—16 lin.

Apparently not very common; appears in summer and has been found near London, in the Isle of Wight, Devonshire, Lake district, &c.

In the "Entomologist's Annual" for 1859, p. 94, 36, this species is said to be synonymous with *areatus*, Kolenati, Brauer,* the inferior appendages of which are produced into a sharp point, but in Curtis's types these appendages are decidedly thickened at the apex, similar to the last species, but it may be readily separated therefrom by its darker colour, and more rounded wings. Stephens's series of *stellatus* (which agree well with Curtis's types) was labelled "*pantherinus*, Kolen.," by Dr. Hagen.

S. radiatus, Rambur. (Pl. IX. fig. 8.)

Limnephila radiata, Rambur, Hist. Nat. Névrop. p. 479, 12.

Antennæ, head and thorax brown, the latter darker on the sides, collar with a tuft of brown hairs; abdomen above fuscous, beneath brownish, annulated with dark red; legs pale brown, with black spines; anterior wings pale mouse-grey, with a faint reddish tinge, and conspicuously pale greyish-yellow markings—viz. long streaks in the cells before the anastomosis, a bilobed spot, a spot at the base of the third and fifth apical cells, and a long streak in each of the apical cells, forming a curved series (in the female these markings are not so conspicuous); veins ochreous; posterior wings sub-hyaline, tinged with ochreous towards the apex.

Upper margin of last abdominal segment cut off straight; appendices superiores concealed in the last segment, only the points visible from above, oblong, with a projection on the inner margin, covered with black setæ; appendices inferiores long, compressed, turned inwards and rather curved at the tips, which are black, but not visibly thickened; upper pair of sheaths short, broad and triangular, black; lower pair concealed in the tuft of hair between the appendices inferiores.

Long. corp. 5—7 lin.; exp. alar. 14—18 lin.

I captured six specimens on the banks of the Daw at Dawlish, Devonshire, in the middle of September.

I have little doubt, from Rambur's description of *L. radiata*, that my insects are identical, though this and the two last species

* I have since seen European examples of the true *areatus*, and have no hesitation in saying that it is undoubtedly distinct from the present species.

belong to a group of nearly related species, of which there are many in Europe, and mostly undescribed. At any rate I have thought it best to refer the present insect to the above species, rather than to run the risk of causing a probably superfluous synonym by describing it as new.

B. Anterior wings scarcely dilated towards the apex; the hind margin obliquely truncated.

S.? concentricus, Kol. (Pl. IX. fig. 9.)

Goniotaulius concentricus, Kol. Gen. et Sp. Trichop. p. 55, 10; *Limnephilus Vibex*, Brauer, N. A. p. 51, 13, fig. 66, 67 (nec Curtis, Steph.)

Antennæ brown, obscurely annulated with darker; head, prothorax and basal joint of antennæ clothed with long, pale yellow hairs; abdomen greyish-black, the terminal segment paler; legs pale ochreous, with black spines; anterior wings pale shining greyish-yellow, the costal half entirely very pale yellow, and numerous small pale yellow spots are sprinkled over the rest of the wing (sometimes the wings are entirely pale yellow, with scarcely a trace of the darker ground colour, and at others the wings towards the dorsal margin and apex are freckled with greyish-fuscous); veins, especially those of the anastomosis, pale fuscous; posterior wings hyaline, tinged with yellowish at the apex.

Upper margin of last abdominal segment rounded and slightly produced into a lip, which is rolled under and covered with short black setæ; appendices superiores large, obtusely spoon-shaped; appendices inferiores long, dilated towards the tips and somewhat approximating; lower sheaths widely divergent, curved suddenly inwards at the tips; penis considerably exserted.

Long. corp. 6 lin.; exp. alar. 15—16 lin.

Appears from August to the end of October. First discovered in this country in the Norfolk Fens by Mr. Winter of Aldeby, and seems to be rather common there. Two specimens have been taken by Mr. P. C. Wormald at Willesden, Middlesex, and I have a specimen from Hartlepool. This species is widely spread over the Continent of Europe, and is subject to considerable local variation, Kolenati's typical specimens from Russia being much smaller and darker.

The scarcely dilated anterior wings and obliquely truncated hind margins indicate the affinity of this species with *Limnephilus* and *Anabolia;* otherwise in general appearance it resembles *Stenophylax*, and, having been placed in this genus by Dr. Hagen (Stett. Entomol. Zeit. 1859, p. 133), it is retained here.

XVII. *Descriptions of the British Species of the Genus* Gyrophæna, *Group* Staphylini, *Family* Aleocharidæ.

By G. R. Waterhouse, Esq., F.Z.S., &c.

[Read 2nd December, 1861.]

Having taken considerable pains to ascertain the peculiarities of the males of the species of *Gyrophæna*, I am anxious to say a word or two, before I begin my descriptions, with the view of making this matter more clear, and also of shortening the descriptions. The peculiarities which I refer to present themselves in the 6th and 7th segments of the abdomen; and, with regard to the 7th segment, are often difficult to ascertain, as in the dead insect that segment is retracted beneath the 6th, unless care is taken to fix it in its proper position by gum immediately after the insect is killed. From this circumstance the structure of the 7th segment (which is usually very characteristic of the species) has in several instances not been noticed, and in some cases not correctly described. For instance, *G. nana* is said to have the segment in question tridentate at the apex, whereas the normal condition in the species of the genus is a quadridentate termination to the 7th segment, and *G. nana* does not form one of the exceptions in this respect. Among the species which have come under my notice, the most perfectly developed condition of the structure alluded to is seen in the male of *G. gentilis*. Here the 7th abdominal segment terminates in four elongated slender processes, of which the inner pair are approximated, and rather shorter than the outer pair: in other species we find the middle pair gradually becoming smaller until they are quite obliterated, as in *G. fasciata*. One species presents a remarkable modification in the 7th segment; it is the *G. lævipennis*, and is noticed in the description of that species. With regard to the 6th abdominal segment of the male, the normal condition appears to consist in its presenting a transverse row of six, nearly equidistant, short, longitudinal ridges, as seen in *G. fasciata*; in other species we find these little ridges decrease in number by the obliteration of the outer pairs, until but two are left, as in *G. lævipennis*; we find, however, a remarkable exception in the *G. affinis*, where there is but one minute rising in the form a single, and, of course, central tubercle. This tubercle is perhaps formed by the union of the two central ridges observed in the other species, since in *G. pulchella* it is repre-

sented by an indistinct prominence, which appears as if formed by the converging and meeting together of the central pair of ridges. The 6th and 7th abdominal segments in the female are simple. By Erichson the segments in question are described as the 5th and 6th, but I agree with Dr. Kraatz in describing them as 6th and 7th. Usually the 1st, or basal segment, is hidden beneath the elytra; but in several specimens of *Gyrophæna* now before me, owing to the body being unnaturally stretched out, it is perfectly visible.

As regards the structure of the antennæ, it may be remarked that, as a rule, the intermediate joints (the 5th to 10th inclusive) are transverse, dilated and of equal width, or very nearly so; the exceptions are found in *G. affinis* and *G. pulchella*, in which the corresponding joints are as long as broad, or some of them longer than broad; and in *G. strictula*, in which the antennæ differ in the succeeding joints becoming gradually stouter. The thorax generally presents two parallel rows of punctures running from the base to the apex, and near the centre: these are sometimes placed in two longitudinal depressions; the first puncture in each row (or that nearest the base) is indistinct, the second is always the largest, and one or two near the apex are usually distinct; the rest are more or less obsolete. In certain species (such as *G. manca* and *G. minima*), where the thorax has scattered punctures throughout, we still see the remains of the two dorsal rows represented by larger punctures, and especially the pair which correspond with those of the 2nd pair of the dorsal series. In all the species the thorax is margined at the sides and posteriorly—a thin indented line following close to the margin in these parts. In all the *Gyrophænæ* the head and thorax are alutaceous, excepting in *G. nana*, where the peculiar sculpturing I am about to notice is invisible, and the surface is unusually glossy. The alutaceous appearance is caused by a sculpturing consisting of excessively minute scratches; the scratches are curved, and for the most part inclose minute circular (or nearly circular) areas. It is seen most distinctly in *G. strictula;* and is distinct under a compound microscope with a lens of an inch focus; with the same power it is not visible in *G. nana*, though with a stronger lens it may be indistinctly traced. In other parts of the body the alutaceous appearance is also perceptible, and mixed with it, in the abdomen, minute punctures are visible, but so indistinctly as to furnish little or no assistance in the discrimination of the species.

1. *G. pulchella*, Heer, Faun. Col. Helv. i. 3101.
——————— Kraatz, Stett. Ent. Zeit. xv. 185, 4; Naturgesch. der Ins. Deutschl. p. 356, 3.

Testaceous; head, outer apical angle of elytra and a ring on the abdomen piceous; thorax with the disc piceo-rufous; antennæ long, the intermediate joints as long as broad; thorax with two discoidal rows of punctures, those near the fore and hind parts distinct, the intermediate punctures obsolete; elytra nearly smooth, having but extremely fine scattered punctures.

Male with the terminal segments of the abdomen smooth and glossy; the 6th segment with a slightly raised semicircular area: the 7th segment strongly emarginate at the apex, the emarginated part bounded by two processes which converge slightly at the apex, are moderately stout, and by no means acute: within the emargination are two very minute teeth, dividing the space into three equal parts.

Female with the terminal segments distinctly punctured.

From all other British species of *Gyrophæna*, excepting *G. affinis*, the present insect is readily distinguished by its long antennæ, the intermediate joints (5th to 10th inclusive) being fully as long as broad; the 5th, indeed, is distinctly longer than broad: they are entirely testaceous. From *G. affinis* it is distinguished by the following points: the general colouring is paler (i. e. pale testaceous, instead of brownish), the surface of the body is less distinctly alutaceous, and consequently more glossy: both thorax and elytra are relatively longer, and the punctures on the elytra are much finer. Head rather depressed, with distinct, scattered punctures. Thorax rather broader than long; somewhat contracted behind; the sides but little rounded; the posterior angles rounded; the anterior, obtusely angled; of the discoidal punctures, usually four, on the posterior part of the thorax, are distinct; two on the fore part are less distinct, and the remainder are obsolete: elytra taken together rather broader than long (not *distinctly transverse* as in *G. affinis*) the surface very finely and indistinctly punctured, sometimes with the pitchy-black at the apex extending across in the form of a band; sometimes confined to the outer angle, and occasionally obsolete. Abdomen with the basal segments sparingly punctured, the 5th segment usually more or less piceous, the terminal segments, in the female, pretty thickly punctured; in the male smooth—here the 6th segment has a mesial semicircular glossy area, the hinder part with the convex outline, near the apex of the segment, and slightly raised; the fore

part gradually descends to the same plane as the rest of the segment: the 7th segment has the lateral processes, which bound the emargination, rather shorter and stouter than usual.

I have seen but four specimens of this species, three in Dr. Power's collection; and one individual taken by Mr. Rye in fungus at Coomb Wood. This latter specimen presents but one minute tooth in the emarginated part of the 7th abdominal segment of the male, and the pitchy-black of the elytra and 5th abdominal segment is scarcely traceable, so that the insect appears almost entirely testaceous with the exception of the head; in other respects it does not appear to differ from Dr. Power's specimens.

2. *G. affinis*, Mannerh. Brachelytr. 74, 3.
——— Erichs. Käf. Mark Brand. 368, 3; Gen. et Spe. Staph. p. 184, sp. 4.
——— Kraatz, Ins. Deutschl. p. 357, 4.

Pitchy testaceous; head, thorax, posterior angles of elytra, and ante-penultimate segments of abdomen pitchy; legs and antennæ testaceous: thorax with two dorsal rows of punctures, and a few scattered punctures both at the sides and on the disc: elytra with distinct but widely separated punctures: antennæ relatively long.

Male with a single small tubercle on the 6th abdominal segment: the 7th segment terminated by two elongated processes; these by no means widely separated, and somewhat incurved at the apex.

This species is usually rather less than *G. nana*, and is readily distinguished from other British species (excepting *G. pulchella*) by its comparatively long antennæ—here the joints from the 5th to the last are relatively large; those nearest the base are rather longer than broad, whilst the penultimate joints are nearly equal in length and breadth. The head is pitchy black, and presents a few scattered punctures. The thorax is rufo-piceous, less strongly transverse than in *G. nana*, and with the sides less boldly rounded, and the anterior angles slightly obtuse: the discoidal rows of punctures usually contain five punctures in each row, the basal pair more approximated than the second pair, which are the largest, the 4th puncture in each row is usually distinct, the 3rd (sometimes replaced by two punctures) does not appear to be represented on the thorax of *G. nana*, and is here small; and the 5th, or apical puncture, is not unfrequently wanting or very indistinct. Besides these there are several punctures on the disc (between the rows of punctures) which are wanting in *G. nana*. Both head

and thorax are alutaceous. The elytra (if we except a largish patch of pitchy black at the outer apical angle) are paler than other parts, and present distinct, and rather widely separated punctures. The abdomen is for the most part pitchy, but paler at the base and extreme apex, and also on the edges of the intermediate segments.

I have taken this insect in fungus, in the London district, and in Windsor Forest and the New Forest. It is by no means uncommon.

3. *G. lævipennis* (Thomson in litt.), Kraatz, Naturg. der Insecten Deutschlands—Staphylini, p. 358, sp. 7, 1857.

Testaceous; head, outer posterior angles of elytra, and penultimate segments of abdomen piceous; thorax rufo-piceous: head with a few scattered punctures; the disc raised: antennæ with the intermediate joints but little dilated and but little broader than long: thorax with two longitudinal discoidal depressions, and with a row of punctures in each depression, of which one, near the anterior margin, is moderately distinct, and one on the posterior 3rd is large and strong; the rest obsolete: elytra smooth.

Male with two very minute tubercles at the apex of the 6th abdominal segment; the 7th segment larger than usual, gradually contracted in width towards the apex, and with a smallish triangular emargination at the apex.

The average size of this insect is rather less than in *G. nana*, and a little larger than in *G. fasciata*. The head and thorax are alutaceous, and the punctures are less distinct than in *G. nana;* the intermediate joints of the antennæ are less dilated, and less transverse, and the elytra are almost perfectly smooth. The thorax is boldly rounded behind, and but moderately rounded at the sides; the anterior angles are obtuse. In the male, tubercles corresponding with the outer pairs on the 6th abdominal segment in *G. fasciata* are traceable, but they are very indistinct.

I possess specimens of this species from Mr. Heysham's collection, and Mr. Brewer has furnished me with others which form part of a considerable series taken by him in fungi at Reigate. Dr. Power has met with the insect, also in fungi, at Guernley, Leicestershire, and at the Holt Forest, Hampshire; and Mr. Rye has taken it at Coomb Wood.

4. *G. gentilis*, Erichs. Gen. et Sp. Staph. p. 183, 5.
——— Kraatz, Ins. Deutschl. Staphyl. 355, 2.

Rufo-testaceous; head and outer apical angle of elytra black;

thorax and fourth and fifth segments of the abdomen pitchy: thorax with two rows of punctures, and two shallow longitudinal depressions following the rows of punctures: elytra thickly and finely rugulose-punctate.

Male with a row of four short ridges at the apex of the 6th abdominal segment; the 7th segment terminated by four slender processes, the inner pair sub-approximated, the outer pair longer, and incurved at the apex.

Rather larger than *G. nana*, and proportionately rather broader: head with the punctures more numerous, but not so strong: antennæ rather longer; the intermediate joints less strongly transverse: thorax with the fore and aft diameter greater, the sides scarcely rounded, being nearly parallel, excepting near the anterior angle, where they are gradually bent inwards; the anterior angles somewhat obtuse, the posterior margin boldly rounded, distinctly margined; the sides less distinctly margined; the surface rather convex, and, like that of the head, alutaceous; the disc with two shallow longitudinal impressions, in which the discoidal rows of punctures are placed; these are about six in number in each row, and vary in size, but in each row there is one puncture always larger than the others, and this is on the basal third of the thorax. Elytra thickly and very finely punctured throughout, slightly rugulose, and with a few scattered, indistinct, larger punctures: abdomen smooth, or, at least, with excessively minute and indistinct punctures.

The male characters correspond very closely with those of *G. nana*, but the slender processes, projecting from the 7th segment, are more elongated, and the middle pair are more distinctly separated.

The comparatively large size, broader form, and much more thickly punctured elytra, serve to distinguish this species from the *G. fasciata*.

I have met with this species at Weybridge, in fungi, in the month of September; and at Hawkhurst, in Kent, in the spring.

5. *G. nana*.

Staphylinus nanus, Paykul, Faun. Suec. iii. 408, 52.
Gyrophæna nana, Mannerh. Brachelytr. 74, 2.
———————— Erichs. Käf. Mark Brand. 367, 2; Gen. et Sp. Staph. 184, 3.
———————— Fairm. et Lab. Faun. Franc. pt. 3, p. 456, 4.
———————— Kraatz, Ins. Deutschl. Staphyl. 357, 6.

Black; elytra (excepting the region of the posterior outer

angle), basal half of abdomen, legs and antennæ testaceous; thorax with the dorsal rows of punctures distinctly interrupted in the middle; elytra thickly and rather finely punctured and rugulose.

Male with a row of four short, longitudinal ridges on the 6th abdominal segment; the 7th with two horseshoe-shaped emarginations at the apex, each emargination bounded externally by a longish, somewhat incurved tooth, and the two emarginations separated by a bifid process.

Length $1\frac{1}{3}$ lin.

Among the larger species of *Gyrophæna*, *G. nana* holds a middle position as to size. The head presents some large, scattered punctures. The antennæ are rather short and stout; the intermediate joints, 5th to 10th inclusive, are transverse; the 5th moderately so; the 10th nearly twice as broad as long. The thorax is rather broader than the head, and nearly twice as broad as long; the outline nearly semicircular, the sides and posterior margin forming an almost continuous curve; the broadest part, however, is rather behind the middle; the anterior part truncate; the anterior angles slightly acute; the upper surface evenly convex, smooth and glossy: the discoidal rows of punctures interrupted in the middle; usually each row is represented by three punctures on the fore-half of the thorax, and the same number on the hinder half; of these, the 2nd puncture from the base is considerably larger than the others, which are not all of them always present; the two hindermost punctures of the rows are more approximated than the others, and near them are seen one or two small punctures on either side. Besides these, there are usually two approximated small punctures on the anterior 3rd of the thorax, and nearly midway between the dorsal rows and the lateral margin; and a large puncture is always visible a little within the posterior angle. The lateral and posterior margins of the thorax are margined, and narrowly edged with testaceous. The elytra are about one-third broader than the thorax, and each elytron is rather longer than broad; they are testaceous, but have a largish, triangular, black patch at the posterior outer angle; thickly punctured and rugulose, the punctures becoming gradually more closely packed, and the surface more rugulose towards the hinder part of the elytron, and especially near the posterior outer angle within, which is a slightly depressed area. The posterior segments of the abdomen are very finely punctured; usually the apical half of the abdomen is dark (black or pitchy-black), but with the extreme apex often pitchy, and sometimes testaceous.

In fungi, at Weybridge, in the month of September—Reigate, Dr. Power and Mr. Brewer.

6. *G. fasciata.*

Aleochara fasciata, Steph. Illustr. v. 151, 134.
Staphylinus fasciatus, Marsh. Ent. Brit. p. 514, No. 44.
Gyrophæna congrua, Erichs. Käf. Mark Brand. 386, 4; Gen. et Sp. Staphylin. p. 187, sp. 9.
———————— Kraatz, Ins. Deutschl. Staphyl. p. 358, sp. 6.

Testaceous; head pitchy-black, with scattered punctures; thorax fuscous or fusco-testaceous, with two discoidal rows of punctures; elytra pale testaceous, with the outer margin (excepting near and at the shoulder) black; the black dilated near the hinder angle, with minute punctures, widely separated on the fore-half of the elytron, more numerous, and becoming somewhat rugulose towards the apex, especially near the outer angle; the 5th segment, and part of the 4th and 6th segments, black; the surface with but few and extremely minute punctures.

Male with a transverse row of six minute, short ridges near the apex of the 6th abdominal segment; the 7th segment gently emarginate at the apex, and terminating in a long, acute tooth on either side, the two teeth widely separated.

This species is usually rather smaller than *G. nana*, and its general colouring paler; the intermediate joints of the antennæ are rather less transverse; the punctures on the elytra are finer, and less numerous, and the hinder part of the elytron is less rugulose. The abdomen usually has the hinder half of the 4th segment (at least), the whole of the 5th, and the fore-part of the 6th segment, black; and the hinder-part of the 6th, and the whole of the 7th segment, rufo-testaceous, like the base; whereas, in *G. nana*, the whole terminal half of the abdomen is usually dark. The male characters, moreover, are very different in the two insects.

Of the discoidal rows of punctures on the thorax, the second puncture from the base in each row is the strongest, and one at least towards the anterior margin is distinct; the rest are indistinct; and following the rows of punctures are two very obscure depressions. Besides these punctures are two or three punctures on either side, one of which, near the posterior angle, is most conspicuous.

My specimens were found, in fungi, at Weybridge, in September; and Dr. Power has taken the insect at Darenth, also in fungi.

Sp.? 6* ———.

In Dr. Power's collection is a single ♂ specimen of a *Gyrophæna*, which is perhaps new and undescribed; its chief characters are:—oblong; testaceous; head, posterior outer angles of elytra, and 5th abdominal segment, pitchy: head glossy (scarcely alutaceous), gently convex, and with largish scattered punctures, excepting along the mesial line: thorax moderately transverse, the anterior angles obtuse, the posterior rounded, the sides gently rounded, narrowly margined behind; the surface with fine, but rather widely scattered, punctures throughout; the two discoidal rows of punctures obsolete, being represented only by two in each row, and these on the hinder part of the thorax: elytra, taken together, considerably broader than long; and with the whole surface very finely and very thickly punctured, and pretty densely pubescent.

Male with four short ridges on the 6th abdominal segment, and the 7th segment furnished with four longish, slender processes, all terminating in the same transverse line; the middle pair subapproximated; and immediately above these, on the upper surface of the segment, are two small, almost tuberculiform processes—these (unlike the other processes) do not project beyond the apex of the segment.

In the male characters, it will be seen, this species approaches very nearly to *G. fasciata* (= *G. congrua*, Er.) and *G. gentilis*, but it differs from both in having the thorax furnished with minute scattered punctures throughout, and in the punctures of the dorsal rows being obsolete. In having the antennæ entirely pale, and the elytra thickly and finely punctured, it agrees with *G. gentilis*, but it is of smaller size (being equal in bulk to *G. fasciata*) and wants the transverse depression which is seen near the posterior margin of the thorax of *G. gentilis*. In Dr. Power's insect we perceive the usual impressed line immediately within the posterior margin of the thorax (placed, however, nearer to the margin itself than in *G. gentilis*), and immediately within this line the thorax is convex, whilst in *G. gentilis* there is a shallow depression bordering the impressed line. The abdomen is less broadly margined at the sides, moreover, than in *G. gentilis*. It remains to be seen whether these distinctions are specific.

7. *G. lucidula*, Erichs. Käf. Mark Brand. 369, 5.
——— Gen. et Spe. Staph. 187, 10.
— ——— Kraatz, Ins. Deutschl. Staphyl. p. 359, sp. 8.

Black, the legs and basal joints of the antennæ testaceous, the

terminal (dilated) joints of the antennæ fuscous or pitchy; elytra testaceous, more or less broadly margined with black at the sides and base; head destitute of punctures, or very nearly so; thorax strongly transverse, with two distinct punctures on the hinder part of the disc, and pretty widely separated; the other punctures of the dorsal series either wanting or indistinct; elytra smooth, or very nearly so.

Male with the 6th abdominal segment destitute of evident ridges; the 7th segment gently emarginated, and terminated on either side by a tooth which is stoutish at the base, and has the apical half slender; the length of this process is about equal to half the diameter of the interspace.

G. lucidula is about half the size of *G. nana*, but agrees very closely with that insect in general form and proportions; the intermediate joints of the antennæ, however, are less strongly dilated. It is distinguished by its general black hue; the head, thorax and abdomen being entirely black, and the black on the elytra is more extended than in *G. nana* and its immediate allies. Here the dark colour is not only seen on the sides and apical angle of the elytra, but likewise on the basal portion. It is more or less extended in different individuals, and in some the pale colour of the inner part of the elytron is reduced to a small area. The antennæ are darker than in other species, being usually pitchy-black, with the base only testaceous, and this pale colour is often confined to the basal joint. The punctures of the dorsal series are reduced in number and are small and indistinct, if we except the sub-basal pair, which are as usual large and evident. The elytra and abdomen are nearly smooth—with a very strong lens only a few excessively minute punctures being visible.

I have taken this insect rather plentifully in vegetable debris in the Hammersmith Marshes, near London. Dr. Power has also met with it in similar situations at Lee and Eltham. I am not aware that it is found in fungi.

8. *G. minima*, Erichs. Käf. Mark Brand. 370, 7.
——————— Genera et Sp. Staphyl. 192, 19.
——————— Fairm. et Laboulb. 1, 458, 10.
——————— Kraatz, Ins. Deutschl. Staphyl. 359, 9.

Rufo-testaceous; head, posterior angles of elytra and antepenultimate segments of abdomen pitchy; thorax rather strongly transverse, with punctures irregularly scattered over the surface.

Male with four short ridges on the 6th abdominal segment; the 7th terminated by four slender elongated teeth, the outer pair

stronger and slightly incurved at apex; the inner pair shorter and approximated.

The very small size of this insect (it being about two-thirds of a line in length) readily distinguishes it from other pale-coloured species. The intermediate joints of the antennæ are pretty strongly transverse. Among the punctures of the thorax, those belonging to the dorsal series can be indistinctly traced—a pair of these, on the basal third, and a second pair towards the front of the thorax, are usually more distinct than most of the other punctures. These latter are not numerous, and are somewhat widely separated for the most part. The male characters correspond very nearly with those of *G. gentilis*.

I found this species in Windsor Park in the month of June, and Dr. Power has taken it, in fungus, in a wood near Markfield, Leicestershire.

9. *G. manca*, Erichs. Gen. et Sp. Staph. 190, 15.
——— Kraatz, Ins. Deutschl. Staph. 361, 12.

Piceous; antennæ, legs and tip of the abdomen testaceous; thorax transverse, with numerous scattered punctures on the surface, the discoidal rows indistinct; elytra thickly and finely punctured.

Male with the 7th abdominal segment terminated by two widely separated spines.

This species slightly exceeds *G. minima* in size, and is distinguished not only by its pitchy colouring, and by the absence, in the male, of any distinct ridges on the 6th abdominal segment, but likewise by the relatively more ample thorax and elytra (in *G. minima* these parts are unusually short); the eyes are proportionately larger and more prominent; the thorax less distinctly margined, and the elytra more thickly and finely punctured. The head is gently convex above and presents some scattered punctures. The intermediate joints of the antennæ are stout and pretty strongly transverse. The posterior margin of the thorax is moderately rounded; the sides more gently rounded; the anterior angles somewhat obtuse; the surface moderately convex and punctured; the punctures fine and scattered, and on the disc four larger punctures are usually pretty distinct, these being arranged so as to form a square.

Dr. Power took this insect plentifully under bark on an old stump, among fungous matter, near Thorton Reservoir, near Markfield, Leicestershire, in August, 1860, and it is from some

of these specimens, kindly furnished me by him, that the above description is drawn up.

10. *G. strictula*, Erichs. Gen. et Sp. Staph. 191, 17 (1840).
——————— Kraatz, Ins. Deutschl. Staph. 360, 10 (1858).
G. lævigata, Heer, Faun. Col. Helv. i. 310, 2 (1839)?
——————— Fairm. et Lab. Faun. Ent. Fr. i. 459, 12 (1854).

Piceous; legs and antennæ testaceous; head, thorax and elytra very distinctly alutaceous, and consequently but little glossy; eyes but little prominent; antennæ gradually stouter to the apex: thorax considerably narrower than the elytra; moderately transverse, and with two shallow longitudinal impressions, in which traces of the dorsal rows of punctures are visible but very indistinct: elytra with very minute scattered punctures; the humeral angle often rufescent, as is likewise the apex of the abdomen.

Male with four short ridges on the 6th abdominal segment; the 7th segment with the two outer teeth, or spines, of moderate length, being about equal to half the diameter of the gently emarginated interspace; this latter with a small semicircular notch in the centre, bounded on either side by a minute denticle.

This species is about equal in bulk to the *G. lucidula*, but of a more elongated form; the head and thorax decidedly narrower, and the elytra longer than in that insect. It is rather larger than *G. manca*, from which it differs not only in not having punctures irregularly scattered over the whole surface of the thorax, but in having that segment relatively smaller and narrower and more distinctly margined.

The head in *G. strictula* is less suddenly contracted behind than usual, and the eyes are less prominent; its upper surface is gently convex and presents small scattered punctures on either side of the central line, which is impunctate.

G. strictula of Erichson is identified by Dr. Kraatz, and by Messrs. Fairmaire and Laboulbène, with the *G. lævigata* of Heer, and possibly these authors may have had an opportunity of examining specimens received from the Swiss naturalist; but judging simply from his description, it appears to me very doubtful whether it refers to the insect above described.

"In a boletus growing on an old gate-stump at the Holt Forest, Hampshire, April, 1860."—Dr. Power.

XVIII. *Characters of undescribed* Lepidoptera *in the Collection of* A. Fry, Esq. By Francis Walker, Esq., F.L.S.

[Read 2nd December, 1861.]

The following *Lepidoptera* were all collected by Mr. Fry in the neighbourhood of Rio Janeiro, and he has kindly allowed me to describe them :—

Fam. LITHOSIIDÆ.

Genus Aucula, n. g.

Mas.—Corpus sat validum. Caput et thorax dense pilosa. Proboscis conspicua. Palpi crassi, dense pilosi, oblique ascendentes, verticem non superantes; articulus 3us brevissimus. Antennæ convolutæ, pectinatæ. Abdomen pilosum, cylindricum, alas posticas paullo superans; fasciculus apicalis subradiatus. Pedes robusti, dense fimbriati. Alæ elongatæ, spissæ, integræ; anticæ apice rotundatæ, margine exteriore subconvexo perobliquo.

Male.—Body moderately stout. Head and thorax densely pilose. Proboscis distinct. Palpi thick, densely pilose, obliquely ascending, not rising higher than the vertex; 3rd joint extremely short. Antennæ convolute, moderately pectinated. Abdomen pilose, cylindrical, extending a little beyond the hind-wings; apical tuft slightly radiating. Legs stout, thickly fringed; hind-tibiæ with four long stout spurs. Wings elongate, stout, entire, moderately broad. Fore-wings somewhat rounded at the tips; costa straight; exterior border slightly convex, very oblique.

Aucula josioides.

Mas.—Obscure rufa, abdomine nigro apice luteo, alis subtus æneo-fuscis, alis anticis purpurascente albo-conspersis, fascia subtus exteriore latissima lutea, alis posticis luteis æneofusco-marginatis.

Male.—Dark red. Antennæ and abdomen black; the latter with a luteous tip. Pectus cinereous. Wings beneath æneous brown. Fore-wings minutely speckled with purplish white; underside with an exterior, very broad luteous band, which is slightly traced on the upper surface. Hind-wings luteous, bordered with æneous brown.

Length of the body 9 lines; of the wings 22 lines.

Fam. ARCTIIDÆ.

Genus Addua, n. g.

Mas.—Corpus robustum. Proboscis obsoleta. Palpi porrecti, graciles, brevissimi, caput non superantes; articulus 3us minimus. Antennæ subserratæ. Abdomen læve, alas posticas vix superans. Pedes sat graciles; tibiæ pilis longis fimbriatæ; calcaria parva. Alæ amplæ; anticæ elongatæ, vix acutæ, costa recta, margine exteriore sub-recto valde obliquo.

Male.—Body stout. Proboscis obsolete. Palpi porrect, slender, very short, not extending beyond the head; 3rd joint very minute. Antennæ minutely serrated. Abdomen smooth, hardly extending beyond the hind-wings. Legs rather slender; tibiæ fringed with long hairs; spurs small. Wings ample. Fore-wings elongated, hardly acute; costa straight; exterior border almost straight, very oblique.

Addua inclusa.

Mas.—Cervina, abdomine flavescente vitta fasciisque cervinis subtus albidos apice fusco, alis anticis albidis testaceo-marginatis, macula vittaque extus nigro-marginata fuscis, plaga subapicali diffusa cervina, alis posticis flavescente albis fusco late marginatis.

Male.—Fawn-colour. Abdomen yellowish, with a fawn-coloured band on the hind border of each segment, and a broad fawn-coloured stripe; under-side whitish, brown at the tip. Wings semi-hyaline. Fore-wings whitish, bordered with pale testaceous; a brown spot on the interior part of the disk, and a brown stripe on the interior border; this stripe is obliquely abbreviated and blackish-bordered exteriorly; a diffuse fawn-coloured sub-apical patch. Hind-wings yellowish white, with a broad brown border.

Length of the body 9 lines; of the wings 24 lines.

Fam. LIPARIDÆ.

Genus Compsa, n. g.

Mas.—Corpus sat validum. Proboscis obsoleta. Palpi lati, obtusi, dense pilosi, oblique ascendentes, verticem paullo superantes; articulus 3us indistinctus. Antennæ breves, pectinatæ. Abdomen lanceolatum, alas posticas vix superans. Pedes breves, robusti, pilosi. Alæ latæ, spissæ, non

longæ; anticæ acutæ, margine exteriore sub-recto perparum obliquo.

Male.—Body moderately stout. Proboscis obsolete. Palpi broad, obtuse, densely pilose, obliquely ascending, rising a little higher than the vertex; 3rd joint indistinct. Antennæ short, moderately pectinated. Abdomen lanceolate, hardly extending beyond the hind-wings. Legs short, stout, pilose. Wings broad, stout, not long. Fore-wings acute; costa and exterior border almost straight, the latter very slightly oblique.

Compsa saturata.

Mas.—Rufescente fusca, alis fimbria ex parte alba, alis anticis cinereo-suffusis, lineis nonnullis undulatis obscurioribus, lineis exterioribus guttularibus rectis, litura discali postica strigaque apicali guttulari flavis, linea costali interrupta alba, alis posticis subtus gutta discali lineaque exteriore undulata nigris.

Male.—Reddish-brown. Wings with the fringe partly white. Fore-wings with the surface mostly covered by a cinereous bloom, in which there are several darker undulating lines; these are succeeded exteriorly by straight lines composed of dots; a yellow hindward discal mark, and an apical yellow streak, which is composed of three dots, two of which are intersected; an interrupted white costal line; underside whitish along the interior border. Hind-wings without markings above; underside partly reddish, with a black discal dot and an exterior black undulating line.

Length of the body 7 lines; of the wings 14 lines.

Fam. NOTODONTIDÆ.

Genus Blera, n. g.

Fœm.—Corpus sat robustum. Proboscis mediocris. Palpi porrecti, graciles, brevissimi, caput non superantes. Antennæ longæ, glabræ, graciles. Abdomen lineare, breve, supra convexum, subtus planum, alas posticas longe superans. Pedes mediocres; tibiæ posticæ calcaribus quatuor longis approximatis. Alæ elongatæ, integræ; antice vix acutæ, margine exteriore convexo valde obliquo.

Female.—Body rather stout. Proboscis moderately long. Palpi porrect, slender, very short, not extending beyond the head. Antennæ long, simple, slender. Abdomen linear, smooth, convex above, flat beneath, conical at the tip, extending far

beyond the hind-wings. Legs moderately long and stout; hind-tibiæ with four long approximate spurs. Wings elongate, entire, moderately broad. Fore-wings hardly acute; costa straight; exterior border convex, very oblique.

Blera ceruroides.

Fœm.—Albido-cinerea, antennis fulvis, abdomine consperso, alis anticis nigro et ferrugineo-rufo conspersis, lineis duabus transversis angulatis indeterminatis, strigis submarginalibus obliquis, alis posticis extus conspersis.

Female.—Whitish-cinereous. Antennæ tawny. Abdomen speckled with reddish-ferruginous, and towards the tip with black. Fore-wings with black and ferruginous-red speckles; the latter hue most prevalent on the under-side; some of the black speckles forming two transverse, irregular, angular lines, and a row of oblique submarginal streaks. Hind-wings thickly speckled exteriorly with ferruginous-red.

Length of the body 9 lines; of the wings 18 lines.

Genus Luca, n. g.

Mas.—Corpus robustum. Caput et thorax dense pilosa. Fasciculus frontalis productus. Proboscis brevis, tennis. Palpi porrecti, graciles, caput vix superantes; articulus 2us subtus dense pilosus; 3us minimus. Antennæ longiusculæ, fasciculis minimis munitæ. Abdomen alas posticas longe superans. Pedes breves, robusti, dense pilosi. Alæ spissæ, elongatæ, integræ, anticæ apice rotundatæ, margine exteriore convexo perobliquo.

Male.—Body stout. Head and thorax densely pilose. Frontal tuft prominent. Proboscis short, feeble. Palpi porrect, slender, hardly extending beyond the head; 2nd joint densely pilose beneath; 3rd very minute. Antennæ rather long; each joint furnished with a very minute tuft. Abdomen extending far beyond the hind-wings. Legs short, stout, densely pilose. Wings stout, elongate, entire, not broad. Fore-wings somewhat rounded at the tips; costa straight; exterior border convex, very oblique.

Luca herbida.

Mas.—Herbida, capite thoraceque viridescente ochraceis, abdomine fuscescente cinereo basi ochraceo, alis anticis albo-notatis lineis nonnullis saturatioribus transversis undulatis, lineis

exteriore et sub-marginali albis, plaga discali pallide ochracea nigro-conspersa, alis posticis extus fuscescente-cinereis.

Male.—Cinereous. Head and thorax greenish-ochraceous. Antennæ white beneath. Abdomen brownish-cinereous, ochraceous at the base. Fore-wings grass-green, with some white marks and some deeper green transverse undulating lines, exterior and sub-marginal lines white, the latter composed of lunules; a pale ochraceous, black-speckled discal patch, and a few black speckles at the base; costa and fringe with black marks. Hind-wings brownish-cinereous exteriorly.

Length of the body 10 lines; of the wings 22 lines.

Genus Nagidusa, n. g.

Mas.—Corpus sat robustum. Caput et thorax dense pilosa. Proboscis obsoleta. Palpi brevissimi. Antennæ glabræ. Abdomen alas posticas longe superans. Pedes validi, pilosi; tibiæ posticæ quadricalcaratæ. Alæ longæ, lanceolatæ; anticæ vix acutæ, costa recta, margine exteriore sub-convexo perobliquo.

Male.—Body moderately stout. Head and thorax densely pilose. Proboscis obsolete. Palpi extremely short. Antennæ bare. Abdomen extending far beyond the hind-wings. Legs stout, pilose; hind-tibiæ with moderately long spurs. Wings long, lanceolate. Fore-wings hardly acute; costa straight; exterior border slightly convex, extremely oblique.

Nagidusa xylocampoides.

Mas.—Cinerea, capite thoraceque cinereo-viridescentibus, abdomine pallide sub-ochraceo, alis anticis viridescente marginatis nigro-conspersis, litura discali parva strigaque sub-apicali lanceolata nigris, plaga apicali alba, fascia marginali fusca, fimbria albo-guttata, alis posticis fusco-marginatis.

Male.—Cinereous. Head and thorax dull cinereous-green. Abdomen dull pale ochraceous. Fore-wings greenish along the borders, speckled with black; discal mark small, black; a white apical patch, and a black lanceolate sub-apical streak; a brown marginal band; fringe greenish, with black dots. Hind-wings brown towards the tips and along the exterior border.

Length of the body 8 lines; of the wings 20 lines.

Genus Phastia, n. g.

Mas.—Corpus vix robustum. Caput et thorax dense pilosa. Proboscis obsoleta. Palpi porrecti, vix angulati, validi, compressi, subpilosi, caput paullo superantes; articulus 3us brevis, sub-decumbens. Antennæ setulosæ, pubescentes. Abdomen cylindricum, longissimum, alas posticas valde superans, apice depressum. Pedes breves; tibiæ fimbriatæ. Alæ elongatæ; anticæ apice rectangulatæ, costa vix convexa, margine exteriore convexo perobliquo.

Male.—Body hardly stout. Head and thorax thickly pilose. Proboscis obsolete. Palpi porrect, stout, compressed, with short hairs extending a little beyond the head; 3rd joint very slightly declining, less than one-fourth of the length of the 2nd, with which it hardly forms an angle. Antennæ setulose, pubescent. Abdomen cylindrical, very long, extending for half its length beyond the hind-wings; tip flattened. Legs short, moderately stout; tibiæ fringed; hind-tibiæ with four long spurs. Wings elongated, not broad. Fore-wings rectangular at the tips; costa very slightly convex; exterior border convex, very oblique.

Phastia basalis.

Mas.—Viridescente-cinerea, capite thoraceque nigro-conspersis, abdomine rufescente cinereo basi luteo, alis anticis nigro-conspersis, lineis nigris indeterminatis lunularibus, alis posticis rufescentibus.

Male.—Greenish-cinereous, whitish-cinereous beneath. Head and thorax black-speckled. Abdomen reddish-cinereous, luteous at the base, whitish-cinereous and black-speckled at the tip. Fore-wings irregularly black-speckled; lines black, irregular, chiefly composed of lunules; sub-marginal line more distinct than the other three. Hind-wings reddish. Wings beneath reddish-speckled, without any markings.

Length of the body 9 lines; of the wings 18 lines.

Genus Rifargia, n. g.

Mas.—Corpus robustum. Caput et thorax dense pilosa. Proboscis obsoleta. Palpi porrecti, validi, pilosi, brevissimi, caput non superantes; articulus 3us minimus. Antennæ serratæ, sub-fasciculatæ. Abdomen alas posticas superans. Pedes validi, pilosi. Alæ mediocres; anticæ elongatæ,

apice rotundatæ costa recta, margine exteriore sub-convexo perobliquo.

Male.—Body stout. Head and thorax densely pilose. Proboscis obsolete. Palpi porrect, stout, pilose, very short, not extending beyond the head; 3rd joint very minute. Antennæ serrated on each side, with a setulose tuft on each tooth. Abdomen extending somewhat beyond the hind-wings. Legs stout, pilose. Wings moderately broad. Fore-wings elongate, rounded at the tips; costa straight; exterior border slightly convex, very oblique.

Rifargia xylinoides.

Mas.—Fusca, alis anticis purpureo-tinctis, costa basi vitta postica maculaque sub-marginali viridescentibus, lituris duabus basalibus strigisque marginalibus nigris, striga apicali ligni-colori, reniformi angusta rufescente nigro-interlineata, alis posticis albidis margine interiore sub-cervino.

Male.—Brown, whitish-cinereous beneath. Fore-wings with a purple tinge, greenish along the costa and at the base, with a greenish hindward stripe, and with a greenish sub-marginal spot; a black mark at the base and a black streak along the base of the interior border; a row of longitudinal black streaks along the exterior border; fringe with blackish dots; a pale oblique wood-coloured apical streak; reniform mark narrow, reddish, interlined with black. Hind-wings whitish, with a fawn-coloured tinge along the interior border, which is fringed with long hairs.

Length of the body 8 lines; of the wings 18 lines.

Fam. HADENIDÆ.

Genus Hadena, Treit.

Hadena opima.

Fœm.—Ferruginea, palpis oblique ascendentibus dense pilosis verticem non superantibus, abdomine alas posticas superante, alis anticis nigro-conspersis ex parte pallidioribus, lituris cinereis, lineis tribus lunulisque marginalibus nigris, reniformi magna indeterminata disco albido, alis posticis cinereis extus fuscis.

Female.—Ferruginous, partly cinereous beneath. Palpi stout, obliquely ascending, not rising higher than the vertex; 2nd joint densely pilose beneath; 3rd conical, hardly one-third of the length of the 2nd. Abdomen extending somewhat beyond the hind-wings. Wings with the fringe slightly festooned. Fore-

wings irregularly speckled with black, partly paler ferruginous, with some cinereous marks on the veins ; basal, interior and exterior lines black ; exterior line forming some very acute angles ; marginal lunules black ; reniform mark large, transverse, indeterminate, with a whitish disk. Hind-wings cinereous, speckled with brown, wholly brown exteriorly ; an indistinct brownish band and an exterior cinereous line ; marginal lunules blackish ; underside paler, with brown speckles and with two undulating brown lines.

Length of the body 11 lines ; of the wings 24 lines.

Fam. POAPHILIDÆ.

Genus Poaphila, Guen.

Poaphila plagiata.

Fœm. — Pallide cinereo-cervina, palpis porrectis compressis supra fimbriatis caput superantibus articulo 3o minimo, antennis breviusculis, abdomine alas posticas superante, alis anticis acutis, plaga oblonga guttaque exteriore lunulisque marginalibus nigris.

Female.—Pale cinereous fawn-colour, paler beneath. Palpi porrect, compressed, fringed above, extending somewhat beyond the head ; 3rd joint very minute. Antennæ bare, rather short. Abdomen extending rather beyond the hind-wings. Legs smooth, with long spurs. Fore-wings acute, with an oblong black patch which extends to the interior border, and with an exterior black dot which is nearer the costa ; marginal lunules black ; exterior border slightly convex.

Length of the body 5 lines ; of the wings 10 lines.

Poaphila ? figurata.

Fœm.—Fuscescente cinerea, palpis longis compressis ascendentibus, antennis glabris, alis anticis lituris nonnullis atris alboflavescente narginatis, linea sub-marginali fusca undulata, lunulis marginalibus nigricantibus, punctis costalibus exterioribus pallidis, margine exteriore sub-angulato.

Female.—Brownish-cinereous. Palpi compressed, long, obliquely ascending ; 2nd joint rather broad ; 3rd acuminated, very slender, more ascending than the 2nd, and nearly half its length. Antennæ bare. Fore-wings with some deep black marks, which are bordered with yellowish-white, and consist of an oblong patch

near the base of the interior border, an oblique band which is very deeply bent and almost interrupted in the middle, a dot and an undulating streak in front of the band; the latter is shaded with brown on the outer side, and is followed by an undulating brown sub-marginal line; marginal lunules blackish; some pale points along the exterior part of the costa; exterior border slightly angular in the middle. Hind-wings more brownish than the fore-wings.

Length of the body 6 lines; of the wings 16 lines.

Genus Phurys, Guen.

Phurys mensurata.

Fœm.—Cervina, palpis oblique ascendentibus verticem non superantibus articulo 3o minimo, abdomine alas posticas paullo superante segmentis pallido marginatis, alis anticis purpurascente tinctis, linea exteriore recta obliqua extus nigro-marginata antice dilatata, linea adhuc exteriore e punctis nigris, lineis interiore et media ochraceis undulatis valde indistinctis, alis posticis pallidioribus fascia submarginali fusca lata diffusa.

Female.—Fawn-colour. Palpi obliquely ascending, not rising so high as the vertex; 3rd joint very minute. Abdomen extending a little beyond the hind-wings, slightly compressed at the tip; hind borders of the segments pale. Fore-wings with a purplish tinge; exterior line straight, oblique, bordered with black on the outer side, except in front, where it is dilated into a band; a more exterior line of black points; interior and middle lines ochraceous, undulating, very slender, and indistinct, the latter terminating near the interior border in a diffuse black streak. Hind-wings and underside of the fore-wings paler, with a broad brown diffuse sub-marginal band.

Length of the body 8 lines; of the wings 20 lines.

Fam. HYPENIDÆ.

Genus Hypena, Schr.

Hypena? scissilinea.

Mas.—Pallide ochracea, capite thoraceque antico obscure rufis, hujus margine postico nigro, palpis compressis longissimis sub-fimbriatis oblique ascendentibus, antennis sub-pubescentibus, tibiis posticis calcaribus duobus apicalibus uno longis-

simo, alis elongatis nigro-conspersis, linea exteriore nigricante duplicata recta obliqua extus nigro-punctata, alis anticis peracutis, linea interiore fusca angulosa postice abbreviata, striga sub-costali obliqua nigricante, reniformi magna pallido-marginata, orbiculari e puncto nigro, margine exteriore sub-flexo.

Male.—Pale dull ochraceous. Head and palpi dark red. Palpi compressed, very long, slightly fringed, obliquely ascending, rising much higher than the head; 3rd joint nearly as long as the 2nd. Antennæ minutely pubescent. Forepart of the thorax dark red, bordered with black hindward. Legs smooth; hind-tibiæ with apical spurs, one of which is very long. Wings elongated, black-speckled, with a double exterior straight oblique blackish line, which has some black points along its outer side, and is very acutely retracted towards the tips of the fore-wings. Fore-wings very acute, darker about the tips; interior line brown, zigzag, much abbreviated hindward; a blackish oblique streak extending from the costa to the reniform mark; the latter is large, pale-bordered, and a little darker than the ground hue; orbicular mark forming a black point; exterior border slightly bent in the middle.

Length of the body 6 lines; of the wings 18 lines.

XIX. *Characters of undescribed* Lepidoptera *in the Collection of W. W. Saunders, Esq., F.R.S., &c.* By Francis Walker, Esq., F.L.S.

[Read 2nd Dec. 1861.]

Fam. SPHINGIDÆ.

Genus Andriasa, Walk.

The description of this genus is taken from the following species. It is closely allied to *A. contraria* in general structure, but is quite distinct in colour and markings. *A. marginalis* will form a distinct genus.

Mas.—Corpus robustum, elongatum. Caput cristatum. Proboscis obsoleta. Palpi validi, erecti, caput non superantes; articulus 2us dense pilosus; 3us sub-obsoletus. Antennæ robustæ, serratæ, pubescentes. Abdomen lanceolatum, alas posticas longe superans. Pedes longi, setulosi, sub-pilosi; tibiæ posticæ calcaribus quatuor approximatis. Alæ amplæ, longiusculæ; anticæ acutæ, costa recta, margine exteriore convexo.

Male.—Body stout, elongate. Head crested. Proboscis obsolete. Palpi stout, vertical, not rising higher than the head; 2nd joint densely pilose in front; 3rd nearly obsolete. Antennæ stout, serrated, pubescent. Abdomen lanceolate, extending far beyond the hind wings. Legs long, setulose, slightly pilose; hind-tibiæ with four approximate spurs, one of the apical pair long. Wings ample, rather long. Fore-wings acute; costa straight; exterior border convex, moderately oblique.

Andriasa erubescens.

Mas.—Cinereo-cervina, alis subtus linea sub-marginali nigra sub-denticulata, alis anticis lineis quatuor nigricantibus, 1a, 2a, 3aque postice approximatis, 1a undulata, 2a, 3a, 4aque obliquis sub-denticulatis, alis posticis roseo-rufis linea sub-marginali nigricante indistincta.

Male.—Cinereous fawn-colour. Wings beneath with a black slightly denticulated sub-marginal line. Fore-wings with four blackish transverse lines; 1st, 2nd and 3rd lines approximate on the interior border; 1st line undulating, not oblique; 2nd, 3rd and 4th oblique, slightly denticulated; underside rosy-red towards

the base. Hind-wings mostly rosy-red, with an indistinct blackish sub-marginal line.

Length of the body 12 lines; of the wings 24 lines.

Natal.

Fam. LIPARIDÆ.

Genus Euproctis, Hubn.

Euproctis punctilinea.

Mas.—Nigra, corpore subtus abdomineque apicem versus pedibusque læte ochraceis, capite thoraceque antico sub-flavescentibus, thorace pilis nonnullis longis nigris, tibiis nigro-vittatis, tarsis nigro-fasciatis, alis linea exteriore e punctis nigris.

Male.—Pure white. Body beneath and legs bright-ochraceous. Head and fore part of the thorax with a yellowish tinge. Antennæ with reddish fawn-coloured branches. Thorax with some long black hairs. Abdomen bright ochraceous towards the tip. Tibiæ striped with black, tarsi with black bands. Wings broad, shining, with an exterior line of black points, those on the fore-wings forming a short streak by the interior border. Hind-wings extending much beyond the abdomen.

Length of the body 9 lines; of the wings 24 lines.

West Africa.

Genus Cispia, Walk.

The *Cispia* here described much resembles *C. punctifascia*, but is sufficiently distinct to be considered as another species.

Cispia venosa.

Mas.—Læte lutea, palpis apice nigris, antennis nigris late pectinatis, pedibus nigricantibus, alis apud venas pallide flavescentibus fascia subtus fuscescente exteriore arcuata incompleta, alis anticis vix acutis costa sub-convexa.

Male.—Bright luteous. Palpi with black tips. Antennæ black, broadly pectinated. Legs mostly blackish. Wings ample, pale-yellowish along the veins; underside with an exterior curved brownish incomplete band. Fore-wings hardly acute; costa slightly convex; exterior border rather oblique.

Length of the body 10 lines; of the wings 30 lines.

Hindostan.

Genus Lymantria, Hubn.

Lymantria rufopunctata.

Mas.—Alba, crassa, capite thoraceque flavescente tinctis, abdominis apice cervino dense lanuginoso, alis anticis fasciis tribus indistinctis macularibus pallide flavescentibus, punctis quatuor ochraceo-rufis, pilis apud marginem interiorem longis clavatis flavis.

Male.—White, thick. Head and thorax with a yellowish tinge. Antennæ moderately pectinated. Abdomen at the tip fawn-colour and densely lanuginous. Fore-wings with three indistinct macular pale-yellowish bands and with four orange-red points, of which one is in the fore part of the disk, one near the exterior border, and two near the interior angle; interior border with long clavate yellow hairs.

Length of the body 10 lines; of the wings 22 lines.

Natal.

Genus Colussa, Walk.

In the Museum list of *Lepidoptera—Heterocera*,—some species of *Colussa* have been included erroneously with *Darala*, and it would seem that nearly all the *Œnochromidæ* should be transferred from the *Geometrites* to the *Liparidæ*, or should form a family of *Bombycites*.

Colussa varia.

Darala varia, Cat. Lep. 1st Ser. iv. 890.

Var. *Mas.*—Sub-purpurascente cinerea, abdomine sub-cervino apice nigro, alis linea interiore angulosa obscure purpurascente, linea exteriore flava intus purpurascente marginata, fascia adhuc exteriore purpurascente lineam nigram angulosam includente, alis anticis punctis duobus discalibus nigris, linea interiore ex parte duplicata. Var. Minor, alis linea interiore sub-obsoleta, fascia pallide rufescente, alis anticis punctis discalibus purpureo-marginatis.

Var. *Male.*—Cinereous, with a slight purplish tinge. Legs purplish, speckled with black. Abdomen slightly fawn-coloured; tip black. Wings with an interior zigzag dark purplish line, which is partly double in the fore-wings; exterior line yellow, bordered with purplish on the inner side, contiguous on the outer side to a purplish band, which includes a black zigzag line; fringe yellowish. Fore-wings with two black discal points; the band

obsolete, except towards the interior border. Hind-wings with two black discal points on the underside.

Australia.

Var. Smaller. Wings with the interior line almost obsolete; band pale reddish; the black zigzag line followed by a corresponding red line. Fore-wings with the discal points purple-bordered.

Moreton Bay.

Colussa latifera.

Fœm.—Cinerea, *D. hamatæ* valde affinis, capite fascia nigra, antennis flavis, genubus albis, alis lineis duabus obscure purpurascentibus, 1a dentata undulata, 2a recta obliqua extus flavo-marginata, linea exteriore fusca angulosa flavo-marginata, alis anticis falcatis basi rufescentibus, linea 1a duplicata, spatio exteriore rufescente. Var. Pallidior.

Female.—Cinereous, closely allied to *D. hamata* (Cat. Lep. 1st Ser. 895). Body slightly tinged with reddish. Head with a black band in front of the antennæ, which are yellow. Legs black-speckled; knees white. Wings ample, with an interior dentate, undulating, dark-purplish line, and with an exterior straight oblique line of the same hue, which is bordered with yellow on the outer side, and is abruptly retracted on the costa of the fore-wings; a more exterior brown, zigzag, yellow-bordered line, which is nearly obsolete in the fore-wings, except towards the interior border. Fore-wings falcate, reddish about the base, with a basal line, which is the double of the line above mentioned; a reddish space along the hind part of the exterior line. Hind-wings with the space between the straight line and the zigzag line reddish; exterior border somewhat truncate at the tip, quadrate hindward.

Length of the body 14 lines; of the wings 38 lines.

Australia.

Var. Paler. Body and basal part of the wings without any reddish tinge; a broader space on the interior border between the interior line and the exterior line; exterior reddish space nearly obsolete; a yellowish tinge on the surface between the exterior line and the exterior border.

Moreton Bay.

Colussa directa.

Mas.?—Flavescente cinerea, roseo sub-tincta, capite antico nigricante, antennis flavis pectinatis, alis linea interiore nigricante dentata incompleta, linea exteriore rufescente nigra sub-recta

extus flavo-marginata, linea adhuc exteriore nigricante punctata angulosa, linea sub-marginali rufescente indistincta incompleta postice diffusa, alis anticis non fulcatis, punctis duabus discalibus nigris purpureo-marginatis.

Male?—Yellowish-cinereous, with a very slight rosy tinge. Head blackish in front. Body reddish beneath. Palpi blackish, red above. Antennæ yellow, moderately pectinated. Wings with an interior incomplete, dentate, blackish line; exterior line reddish-black, almost straight, yellow-bordered on the outer side; a more exterior blackish zigzag line, which is marked by points, and has a corresponding indistinct and incomplete reddish line on its outer side; this line is diffuse towards the interior border; fringe yellowish fawn-colour. Fore-wings not falcate, with two black purple-bordered discal points. Hind-wings with a black purple-bordered discal point on the underside.

Length of the body 12 lines; of the wings 32 lines.

Moreton Bay.

Genus Arhodia, Guen.

A. semirosea is very closely allied to *A. lasiocamparia*, and still more so to *A. retractaria*, but may be distinguished from the latter by the more straight band of the hind-wings.

Arhodia semirosea.

Fœm.—Cinerea, *A. retractariæ* simillima, cervino-subtincta, alis anticis atomis, lineisque duabus obliquis indistinctis nigro-purpurascentibus, linea 2a punctulari, plaga subtus magna nigro-purpurea, alis posticis pallide rufis, gutta discali lineaque media purpureo-nigris.

Female.—Cinereous, head, thorax and fore-wings slightly tinged with fawn-colour. Abdomen reddish fawn-colour, especially towards the base. Fore-wings acute, minutely speckled with purplish-black, with two indistinct oblique lines of the same hue; 2nd line composed of points; exterior border extremely oblique; underside with a large blackish-purple patch, which is connected on the inner side with an angular line. Hind-wings pale red, thinly speckled; discal dot and middle line purplish-black, distinct; interior border with white hairs; underside fawn-colour, whitish along the interior border.

Length of the body 11 lines; of the wings 32 lines.

Moreton Bay.

Genus Choara, Walk.

The following species seems to connect *Choara* with *Hypographa* by means of *H. privata*, to which it is much more allied than to *H. Phlegetonaria*, the type of the genus.

Choara indicator.

Mas.—Cinerea, capite antico palpisque ferrugineis cinereo-variis, antennis late pectinatis, abdomine e punctis fuscis quadrilineato lateribus anticis cristatis, alis nigro-conspersis rufescente vix tinctis, lineis duabus e punctis paucis nigris, linea media diffusa indistincta annuloque discali nigricantibus, alis anticis sub-falcatis plaga subtus magna nigra, alis posticis apud marginem interiorem albidis ferrugineo-variis.

Male.—Cinereous. Head in front and palpi ferruginous, varied with cinereous. Antennæ broadly pectinated. Abdomen with small crests along each side; its forepart with four rows of brown points. Legs with ferruginous bands. Wings with a very slight reddish tinge, minutely black-speckled; interior and exterior lines composed of a few black points; middle line blackish, diffuse, indistinct, on the inner side of the blackish discal ringlet. Fore-wings sub-falcate; costa straight; exterior border convex, slightly excavated in front; underside with a large black patch. Hind-wings whitish, and varied with ferruginous along the interior border.

Length of the body 9 lines; of the wings 24 lines.

Moreton Bay.

Genus Darala, Walk.

Darala cinctifera.

Mas et *Fœm.*—Nigro-fusca, thorace pilis longissimis, abdomine nigro, alis anticis litura discali alba transversa. *Mas.*—Antennis late pectinatis, abdominis segmentis ochraceo-marginatis pilis apicalibus longis albis. *Fœm.*—Antennis sub-pectinatis, abdomine apicem versus niveo.

Male and *Female.*—Thorax with very long hairs. Abdomen black. Fore-wings with a white transverse discal mark. Hind-wings with a white transverse mark on the underside. *Male.*—Antennæ broadly pectinated. Abdomen with long apical white hairs; hind borders of the segments bright ochraceous. *Female.*—Antennæ slightly pectinated. Abdomen with the apical third part bright white; hind borders of the segments dark ochraceous.

Length of the body 13—14 lines; of the wings 24—28 lines.

Moreton Bay.

Darala lineosa.

Mas.—Cervina, capite thoraceque albido-conspersis, antennis subpectinatis, alis pallidissime cervinis, alis anticis lineis albis nigro-strigatis fasciisque tribus nigris diffusis incompletis, alis posticis lituris marginalibus cuneatis fuscescentibus.

Male.—Fawn-colour. Head and thorax with numerous whitish hairs. Antennæ very slightly pectinated. Abdomen and underside tawny. Wings very pale fawn-colour. Fore-wings with whitish black-streaked lines on the veins, and with three incomplete and diffuse black bands. Hind-wings with brownish cuneiform marginal marks.

Length of the body 12 lines; of the wings 28 lines.

Australia.

Darala quadriplaga.

Mas.—Ochracea, antennis late pectinatis, alis amplis, linea flava recta obliqua fusco-marginata, plaga discali fusca, lineis duabus interioribus rufescentibus angulosis, linea exteriore e punctis fuscis, lineis duabus fuscis adhuc exterioribus, 1a angulosa, 2a maculari sub-marginali, alis anticis maculis duabus discalibus nigricantibus cinereo-punctatis.

Male.—Ochraceous. Antennæ broadly pectinated. Wings ample; a straight, oblique, yellow brown-bordered line, which intersects a brown discal patch in each wing, and is retracted towards the costa of the fore-wings; two more interior reddish zigzag lines, which are almost obsolete on the hind wings: an exterior line of brown points, beyond which there are two brown lines, one zigzag, the other macular and sub-marginal; exterior border convex. Fore-wings acute, with two blackish, cinereous-pointed discal spots. Hind-wings with the interior border densely pilose; interior angle prominent.

Length of the body 8 lines; of the wings 20 lines.

This species will form a distinct section in the genus.

Australia.

Genus Dreata, Walk.

The species here described may form a new genus. It differs in structure from *Dreata* and from *Darala*, but has some affinity to *Darala excellens*.

Dreata caniceps.

Mas.—Ochraceo-fulva, capite cano margine postico nigro, antennis late pectinatis, alis latissimis linea recta obliqua rufes-

cente pallido marginata, lineis duabus exterioribus nigris angulosis, litura discali cinerea parva indistincta nigro-marginata, alis anticis flavescente-cervinis vix falcatis apicibus purpurascente-albidis.

Male.—Ochraceous-tawny. Head hoary, with a black hind border. Antennæ hoary, broadly pectinated, with pale testaceous branches. Legs mostly hoary. Wings very broad, with a dark reddish, pale-bordered, straight, oblique line, and with two exterior black zigzag lines: discal mark small, indistinct, cinereous, black-bordered, white and distinct beneath; underside yellowish-fawn colour; space beyond the 1st line purplish-reddish, with a cinereous tinge. Fore-wings yellowish fawn-colour, shining, with a slight tendency to the falcate form; tips diffusedly purplish-whitish. Hind-wings much rounded; interior angle very prominent, but rounded; interior border very densely pilose.

Length of the body 12 lines; of the wings 30 lines.

Moreton Bay, Australia.

Genus Jana, Boisd.

Jana semirosea.

Mas.—Rufescente ochracea, antennis latissime pectinatis, alis anticis acutis nigro sub-conspersis, lineis tribus nigricantibus obliquis sub-rectis, linea sub-marginali nigricante angulosa indistincta, litura discali parva nigra, alis posticis læte roseo-rufis.

Male.—Reddish-ochraceous. Antennæ pale testaceous, very broadly pectinated. Fore-wings acute, very minutely black-speckled, with three oblique, nearly straight, blackish lines; submarginal line blackish, zigzag, indistinct; discal mark small, black; costa convex; exterior border slightly festooned. Hind-wings above, like the abdomen, bright rosy red; underside with four indistinct, brownish, denticulated lines, of which the 3rd is accompanied by black points.

Length of the body 16 lines; of the wings 38 lines.

Hindostan.

Genus Rhagonis, n. g.

Mas.—Corpus robustum, pilis longis vestitum. Proboscis brevissima. Palpi porrecti, brevissimi. Antennæ late pectinatæ, corporis dimidio longiores. Abdomen alas posticas non superans. Pedes breviusculi; tibiæ posticæ calcaribus breviusculis. Alæ latiusculæ; antice apicæ sub-

rotundatæ, costa recta, margine exteriore convexo subobliquo.

Male.—Body stout, clothed with long hairs. Proboscis very short. Palpi porrect, very short. Antennæ more than half the length of the body, broadly pectinated to the tips. Abdomen not extending beyond the hind wings. Legs rather short; spurs of the hind-tibiæ not long. Wings rather broad. Fore-wings somewhat rounded at the tips; costa straight; exterior border convex, slightly oblique; interior angle rounded.

The affinities of this genus are doubtful. It does not associate well with the *Liparidæ* or with the *Notodontidæ*.

Rhagonis bicolor.

Mas.—Cervina, tibiis anticis intus nigris, alis subtus litura discali magna fasciaque sub-marginali sub-obsoleta nigricantibus, alis anticis litura discali parva nigra, linea interrupta angulari lituraque exteriore discali nigricantibus, alis posticis nigricantibus cervino-marginatis.

Male.—Fawn-colour. Antennæ with black branches. Fore-tibiæ black on the inner side. Wings beneath with a large blackish discal mark, and with some vestiges of a blackish sub-marginal band, which is most distinct on the under side. Fore-wings with a small black discal mark, which forms part of a slight, interrupted, angular, transverse, blackish line; a small more exterior blackish discal mark. Hind-wings blackish, bordered with fawn-colour.

Length of the body 6 lines; of the wings 16 lines.

California.

Fam. NOTODONTIDÆ.

Genus Datana, Walk.

The *Datanæ* hitherto described are inhabitants of North America, but the following species does not seem to differ from them in generic structure.

Datana ruficollis.

Fœm.—Ochraceo-cervina, capite thoraccque rufescentibus, abdomine cylindrico alas posticas superante, alis anticis lineis quatuor rectis fuscescentibus, alis posticis pallide cinereo-cervinis.

Female.—Ochraceous fawn-colour. Head and thorax reddish, the latter short. Antennæ simple. Abdomen cylindrical, ex-

tending beyond the hind-wings. Fore-wings acute, with four slight, straight, brownish lines, of which the first is upright, and the other three are oblique and parallel; exterior border very oblique, slightly convex. Hind-wings pale cinereous fawn-colour.

Length of the body 11 lines; of the wings 24 lines.

Natal.

Genus Abella, n. g.

Fœm.—Corpus robustum, pilosum. Proboscis obsoleta. Palpi porrecti, pilis longis vestiti, caput non superantes; articulus 3us brevissimus. Antennæ breviusculæ, sub-pectinatæ. Abdomen cristatum, alas posticas perpaullo superans. Pedes validi, pilis longis usque ad tarsorum apices vestiti. Alæ amplæ; anticæ longæ, sub-lanceolatæ, vix acutæ; posticæ margine interiore pilis longis vestito.

Female.—Body stout, pilose. Proboscis obsolete. Palpi porrect, clothed with long hairs, not extending beyond the head; 3rd joint very short. Antennæ rather short, very slightly pectinated. Abdomen crested, extending very little beyond the hind-wings. Legs stout, moderately long, clothed with long hairs to the tips of the tarsi. Wings ample. Fore-wings long, somewhat lanceolate, hardly acute; costa convex exteriorly; exterior border very oblique. Hind-wings with long hairs along the interior border.

This genus has much affinity to *Rilia*—the latter contains but one species, a native of Hindostan and of Ceylon.

Abella costalis.

Fœm. — Cinerea, cervino sub-tincta, abdominis crista nigra squamosa, alis anticis cervinis nigro-strigatis et conspersis, venis lineisque duabus indistinctis dentatis nigris, costa vittaque postica albis, fimbria nigro-notata.

Female.—Cinereous, slightly tinged with fawn-colour. Abdomen with a black squamous tuft on the second segment. Fore-wings fawn-colour, irregularly streaked and speckled with black; veins mostly black; two slight, indistinct, deeply dentate black lines; a black incomplete marginal line; costa irregularly white; an irregular white stripe near the interior border, which is pale; fringe with black marks.

Length of the body 9 lines; of the wings 24 lines.

Moreton Bay.

Genus Ela, n. g.

Mas.—Corpus sat robustum, pilis longis vestitum. Proboscis obsoleta. Palpi porrecti, minimi. Antennæ latissime pectinatæ. Abdomen alas posticas superans. Pedes breves, graciles, pilosi, calcaribus minimis. Alæ elongatæ; anticæ apice rotundatæ, margine exteriore recto perobliquo; posticæ margine interiore pilis longis vestito.

Male.—Body moderately stout, clothed with long hairs. Proboscis obsolete. Palpi porrect, very small, not extending beyond the head. Antennæ moderately long, very broadly pectinated. Abdomen extending somewhat beyond the hind-wings. Legs short, slender, pilose; spurs very small. Wings elongate, moderately broad. Fore-wings rounded at the tips; costa straight, slightly rounded towards the tip; exterior border straight, very oblique. Hind-wings clothed with long hairs along the interior border.

This genus is nearly allied to *Abella*.

Ela leucophæa.

Mas.—Fusca, antennis testaceis, alis anticis albo-conspersis, linea sub-marginali alba dentata antice abbreviata postice dilatata intus fusco-obscuro-marginata, alis posticis dimidio exteriore albo.

Male.—Brown, paler beneath. Antennæ testaceous. Fore-wings irregularly speckled with white; a white sub-marginal dentate line, which is dilated hindward and is abbreviated in front, and is bordered with darker brown on the inner side. Hind-wings with nearly half the exterior part white.

Length of the body 8 lines; of the wings 20 lines.

Australia.

Genus Clostra, n. g.

Mas.—Corpus sat robustum. Proboscis obsoleta. Palpi porrecti, pilosi, sat graciles, caput superantes; articulus 3us conicus, brevis. Antennæ graciles, sub-pectinatæ. Pedes pilosi, longiusculi, sat graciles; tibiæ posticæ calcaribus quatuor longis. Alæ amplæ, integræ; anticæ apice sub-rotundatæ, costa sub-convexa; posticæ abdomen superantes.

Male.—Body moderately stout. Proboscis obsolete. Palpi porrect, pilose, rather slender, extending somewhat beyond the head; 3rd joint conical, less than one-fourth of the length of the 2nd. Antennæ slender, slightly pectinated; branches very short

and of equal length. Legs pilose, rather long and slender: hind-tibiæ with four long spurs. Wings ample, entire. Fore-wings slightly rounded at the tips; costa very slightly convex; exterior border convex, rather oblique. Hind-wings extending beyond the abdomen.

Clostra is sufficiently distinct from *Notodonta*, which it resembles more than any other genus of the family.

Clostra tenebriplaga.

Mas.—Fusca, alis anticis lineis tribus fuscis cinereo sabulosè marginatis, 1a 2aque sub-undulatis, 1a antice obsoleta, 3a lunulari, macula discali oblonga sub-ochracea.

Male.—Brown, paler beneath. Fore-wings with three irregular dark brown lines, which are bordered with cinereous speckles; 1st and 2nd lines slightly undulating; 1st obsolete in front; 2nd contiguous to the outer side of an oblong dull ochraceous discal spot; 3rd line composed of lunules. Hind-wings a little paler than the fore-wings, with a still paler exterior border.

Length of the body 9 lines; of the wings 24 lines.

Hindostan.

Fam. LIMACODIDÆ.

Genus Miresa, Walk.

The following species is a native of Australia, but all the other *Miresæ* are Asiatic.

Miresa albibasis.

Mas.—Rufescente cinerea, corpore rufo crasso, alis nitidis non notatis, alis anticis costa basali alba.

Male.—Reddish-cinereous. Body thick, red, very thickly clothed. Antennæ pectinated to much beyond half the length. Wings shining, without markings. Fore-wings white at the base of the costa.

Length of the body 8 lines; of the wings 18 lines.

Moreton Bay.

Fam. DREPANULIDÆ.

Genus Apha, Walk.

Apha subdives has been already characterized, but the following description refers to a distinct variety of it.

Apha subdives.

Var. *Mas.*—Flava, subtus ochracea aut læte rufa, capite thoraceque antico rufescente fuscis; alis anticis basi costa

fasciaque nigricantibus, linea rufescente angulosa; litura discali lineisque duabus exterioribus parallelis angulosis fuscis, spatio adhuc exteriore rufescente linea contigua recta obliqua flava fusco-marginata, spatio marginali viridescente ochraceo lineam rufescente-fuscam includente.

Var. *Male.*—Yellow, ochraceous or bright red beneath, except the exterior part of the wings. Head and forepart of the thorax reddish-brown. Antennæ black. Fore-wings blackish along the basal part of the costa; a blackish band near the base, almost contiguous to a more exterior reddish zigzag line; a brown discal point beyond which there are two parallel zigzag brown lines; these are contiguous to a reddish space, which is concisely limited by a straight, oblique, yellow brown-bordered line; marginal space greenish-ochraceous, containing a dilated reddish-brown line. Hind-wings with the above markings partly or wholly obliterated, with the exception of the yellow line, which has a rosy-red band on its inner side.

Hindostan.

Genus Tagora, Walk.

This new species is nearly allied to *T. amœna*. *Dreata geminata* is a *Tagora*.

Tagora trigutta.

Mas.—Pallide flava, antennis late pectinatis, alis lineis quinque nigricantibus denticulatis parallelis, 4ª guttulari, linea recta obliqua nigricante, alis posticis abdomen longe superantibus.

Male.—Pale yellow, or primrose colour. Antennæ broadly pectinated. Wings ample, with five denticulated parallel blackish lines; a straight oblique blackish line between the 3rd and 4th lines, but not parallel to them; the lines are most distinct on the underside; the 4th is guttular, and is represented above on the fore-wings by three black dots, exterior border convex; interior angle rounded. Hind-wings extending much beyond the abdomen.

Length of the body 10 lines; of the wings 28 lines.

Hindostan.

Fam. SATURNIIDÆ.

Genus Antheræa, Hubn.

Antheræa flavivitta.

Fœm.—Sub-purpurascente albida, capitis lateribus palpisque testaceis, thorace fascia flava antice fusco-marginata, alis ex parte

sub-flavescentibus roseo-conspersis, lineis tribus angulosis fuscis, vitta discali diffusa fusca, ocelli margine luteo nigroque, alis anticis falcatis linea exteriore recta fusca.

Female.—Whitish, with a slight purplish tinge. Sides of the head, palpi and antennæ testaceous, the latter broadly pectinated. Thorax with a broad yellow band, which is bordered with brown in front. Legs, especially the fore-legs, mostly purplish rosy. Wings slightly and partly yellowish, minutely speckled with red; three zigzag brown lines; a yellow diffuse discal stripe; ocellus with a vitreous disk, which is bordered with luteous and again with black. Fore-wings falcate, with a brown straight exterior line, which is between the 2nd and 3rd zigzag lines, and intersects the latter in front.

Length of the body 12 lines; of the wings 36 lines.

Natal.

Genus Hyperchiria, Hubn.

This *Hyperchiria* is most nearly allied to *H. Abas*, but is sufficiently distinguished by the smaller size of the ocellus in the hind-wings, and by other characters.

Hyperchiria rubriluna.

Fœm.—Nigricante cinerea, alis anticis rufescente sub-tinctis valde falcatis, fascia obliqua nigra vix arcuata fulvo-sub-lineata, litura discali nigra parva rufo-varia fulvo-marginata, alis posticis macula discali magna rotunda coccinea albo-notata atro late marginata, fascia lineaque exterioribus nigricantibus.

Female.—Blackish-cinereous. Antennæ minutely setulose. Fore-wings very falcate, with a slight reddish tinge except towards the base, and with a black hardly curved oblique band, which extends from the outer part of the interior border to the tip, and is slightly interlined with tawny; discal mark black, small, varied with red, bordered with tawny, larger and wholly black on the under-side. Hind-wings with a large, round, bright crimson discal spot, which contains a white mark, and is broadly bordered with deep black; an exterior curved blackish band, which is narrowly divided on the inner side from a blackish line.

Length of the body 10 lines; of the wings 30 lines.

Amazon Region.

Fam. BOMBYCIDÆ.

Genus Lebeda, Walk.

Lebeda metaphœa.

Fœm.—Cinerea, antennis nigris serratis, alis anticis lineis duabus indistinctis subundulatis rufescente fuscis, linea exteriore e guttis rufis nigro-notatis, margine exteriore perobliquo, alis posticis rufescente fuscis margine exteriore cinereo.

Female.—Cinereous. Frontal tuft prominent. Palpi clothed with long hairs. Antennæ black, serrated. Fore-wings with two indistinct, slightly undulating, reddish-brown lines, of which the 2nd is more oblique than the 1st, and has along its outer side a row of red black-marked dots; exterior border convex, extremely oblique. Hind-wings reddish-brown, cinereous along the exterior border.

Length of the body 9 ? lines; of the wings 26 lines.

Moreton Bay.

Genus Pœcilocampa, Steph.

Pœcilocampa plurilinea.

Fœm.—Cervina, antennis sub-pectinatis, abdomine longo pilis apicalibus densissimis nigricantibus, alis anticis lineis octo cinereis undulatis, alis posticis pallidioribus.

Female.—Fawn-colour. Antennæ slightly pectinated. Abdomen extending beyond the hind-wings; tip tumid, clothed with a mass of blackish hairs. Wings thinly clothed. Fore-wings with eight cinereous undulating lines; 7th line broad, abbreviated in front; 8th more distinct than the others, curved in front, exterior border very oblique, slightly festooned. Hind-wings paler than the fore-wings.

Length of the body 13 lines; of the wings 28 lines.

Amazon Region.

Pœcilocampa? nigriventris.

Mas.—Pallide cinereo-cervina, antennis late pectinatis, abdomine nigro, alis anticis apice rotundatis costa sub-convexa, margine interiore longissime piloso, alis posticis basi obscurioribus.

Male.—Pale cinereous fawn-colour. Antennæ broadly pectinated. Thorax with long hairs. Abdomen black. Wings shining. Fore-wings rounded at the tips; costa and exterior

border slightly convex, the latter very oblique; interior border with very long hairs. Hind-wings darker towards the base.

Length of the body 8 lines; of the wings 20 lines.

Moreton Bay.

Genus Baubota, n. g.

Mas.—Corpus crassum, dense vestitum. Fasciculus frontalis porrectus. Proboscis obsoleta. Palpi porrecti, pilis longis vestiti, caput superantes. Antennæ breves, pectinatæ. Abdomen alas posticas paullo superans. Pedes breves, validi, pilosi. Alæ elongatæ, integræ; anticæ acutæ, costa extus sub-convexa, margine exteriore perobliquo.

Male.—Body thick, densely clothed. Frontal tuft prominent. Proboscis obsolete. Palpi porrect, with long hairs, extending somewhat beyond the head. Antennæ short, moderately pectinated. Abdomen extending a little beyond the hind-wings. Legs short, stout, pilose. Wings elongate, entire. Fore-wings acute; costa slightly convex exteriorly; exterior border slightly convex, very oblique. Hind-wings with the interior border densely fringed.

Baubota stauropoides.

Mas.—Pallide cinerea, capite antice ochraceo, palpis nigro-fasciatis, alis fimbria fusco-guttata, alis anticis fusco-bilineatis, linea exteriore e punctis nigricantibus, puncto discali albo, costa rufescente, venis luteis, alis posticis rufescentibus.

Male.—Pale cinereous. Head ochraceous in front. Palpi with black bands. Abdomen and disk of the thorax pale dull ochraceous. Legs ochraceous, black, speckled with pale cinereous hairs. Wings with brown dots on the fringe. Fore-wings irregularly reddish along the costa; veins luteous; two oblique brown lines; 1st line deeply zigzag; 2nd hardly zigzag; a mere exterior line of blackish points; discal point white, diffusedly bordered with brown. Hind-wings reddish; underside with a reddish, very oblique, middle band.

Length of the body 10 lines; of the wings 24 lines.

Moreton Bay.

Genus Sena, n. g.

Mas.—Corpus crassum, dense pilosum. Proboscis obsoleta. Palpi breves, oblique decumbentes. Antennæ breviusculæ, late pectinatæ. Abdomen cylindricum, alas posticas sat

superans. Pedes breves, robusti, dense pilosi. Alæ latæ, breviusculæ, costa recta, margine exteriore vix convexo.

Male.—Body thick, densely clothed. Proboscis obsolete. Palpi short, obliquely declining. Antennæ rather short, broadly pectinated. Abdomen cylindrical, extending rather far beyond the hind-wings. Legs short, stout, densely pilose. Wings broad, rather short. Fore-wings slightly rounded at the tips; costa straight; exterior border hardly convex, moderately oblique.

Sena plusioides.

Mas.—Rufescente cinerea, alis anticis fasciis tribus obliquis fuscis, 1a strigam albam includente costam versus retracta, 2a 3aque antice abbreviatis, alis posticis rufescentibus.

Male.—Reddish-cinereous. Fore-wings with three oblique brown bands: 1st band containing an oblique shining white streak, in front of which it is retracted and acutely angular; 2nd and 3rd bands not extending to the costa. Hind-wings reddish, excepting the fringe.

Length of the body 11 lines; of the wings 22 lines.

Natal.

XX. *On some New Species of South African Butterflies.* By Roland Trimen, Esq.

[Read 2nd December, 1861.]

The following species of South African *Rhopalocera* were mostly taken by myself in the Cape Colony in 1858—59; five were described from un-named specimens in the British Museum, and one has been discovered since my return to Cape Town in 1860. Descriptions of them would have been previously published had I not reserved them for intended publication in my "Catalogue of South African Butterflies," the first volume of which is now in the press. As, however, the publication of the latter half of my Catalogue is unavoidably postponed, I think it advisable to publish descriptions of the new species not comprised in the first volume without further delay.

SATYRIDÆ, Swains.

Genus Yphthima, Hübn.

Yphthima Hebe.

Exp. 1 in. 4 lin.

Ochreous-brown. Fore-wing: 2 silvery-centred, black ocelli in orange rings near hind-margin towards apex; before them, a brown transverse streak; beyond them, 2 sub-marginal, parallel, linear, brown streaks. Hind-wing: a row of 5 similar, smaller ocelli (3 next costa minute), parallel to hind-margin; sub-marginal streaks as in fore-wing. Underside.—Pale-yellowish, with red-ochreous striæ. Fore-wing: swelling of costal nervure at base margined with red-ochreous; 3 transverse striæ, the outermost bifid at summit, and reaching from sub-costal nervure to inner margin; ocelli as above, but in additional outer rings of red; sub-marginal streaks as above. Hind-wing: 3 transverse striæ; 2 other short striæ in discoidal cell; a row of 6 ocelli, parallel to hind-margin (the 1st largest), like those in fore-wing; sub-marginal streaks as in fore-wing.

Hab. Port Natal (Plant).—Coll. Brit. Mus.

LYCÆNIDÆ, Leach.

Genus Lycæna, Fab.

Lycæna Methymna.

Expands 1 in. 5 lin.—1 in. 8 lin.

♂. Pale violet-blue; costa and hind margin bordered with fuscous in both wings; cilia conspicuously white, chequered with fuscous. Fore-wing: a reniform fuscous spot closing discoidal cell; in some specimens, traces of a row of fuscous spots beyond middle. Hind-wing: along hind margin a row of fuscous spots in bluish-white rings; the spot between 2nd and 3rd median nervules almost black, bordered internally by a very indistinct yellowish lunule. Underside.—Brownish-grey; ocelliform spots darker-brown, white-edged; in both wings, the usual two rows (transverse) of ocelliform spots, to the inner of which rows the large discal spot is sometimes united. Hind-wing: near base, from 2 to 6 round, black, white-ringed spots; a white-edged black streak, always present, marking origin of costal nervure; white edges of 2 rows of ocelli suffused and filling up narrow space between rows; spot between 2nd and 3rd median nervules outwardly marked with

greenish-silvery; in one specimen a similar smaller spot just above sub-median nervure.

♀. Glistening-brown, with a brassy or coppery gloss; spotless; cilia as in ♂. Underside.—Quite like that of ♂; but inner row of ocelli, in both wings, more irregular, that in fore-wing being sometimes small, inconspicuous, or half-obliterated.

One ♂ specimen in my collection has the 3rd median nervule prolonged into a very short linear tail, but no other example that I have seen has any trace of this appendage. The under surface, in both sexes, is very variable.

The ♂ of this species is more closely allied to the European *L. Arion*, Linn., than any other *Lycæna* I am acquainted with, but the brown ♀ seems to indicate an affinity to *L. Corydon*, *Adonis*, and allies.

This is the largest known South African species of the genus. It frequents hilly, sandy localities near the sea, and seems to be very local.

Hab. Cape Town, Mossel Bay; Coll. mihi.—Cape Town; Coll. South Afr. Mus.

Lycæna Catharina.

Exp. 1 in. 1 lin.—1 in. 5 lin.

♂. Dull violaceous-blue; costa and hind-margin narrowly bordered with greyish-brown in both wings. Hind-wing: on hind-margin, between 1st median nervule and anal angle, from 1 to 4 bright-orange lunules, the largest between 2nd and 3rd median nervules, and with a round black spot touching its outer edge. Cilia whitish-grey. Underside.—Whitish-grey; ocelliform spots blackish or black, white-ringed; in both wings a white-edged, blackish streak closing cell, a sinuate row of conspicuous ocelli beyond middle (those in hind-wing smaller and fainter than those in fore-wing), a sub-marginal row of ill-defined, fuscous, whitish-bordered lunules, and a single small ocellus in discoidal cell. Hind-wing: base dusted with blackish and bluish scales; an ocellus near base, just below sub-costal nervure; orange lunules paler, black spot marked outwardly with some bluish-silvery scales.

♀. Blue paler, less violaceous than in ♂. Fore-wing: costa, apex and hind-margin very broadly bordered with greyish-brown. Hind-wing: costal half of wing greyish-brown, some small outwardly whitish-edged fuscous lunules along hind-margin; orange lunules paler and larger than in ♂, more or less confluent, black spot larger. Underside.—Quite like that of ♂; spots larger, more conspicuous.

This handsome species is very constant in colour and marking. The ♂ resembles, save for its much larger size, the ♂ of *L. Acca*, Westw., a very common South African species. *L. Catharina* was common at Knysna, frequenting open ground, and seeming to prefer grassy places.

Hab. Knysna; Coll. mihi.—King William's Town, British Kaffraria; Coll. W. S. M. D'Urban.—Butterworth, Kaffraria (J. H. Bowker); Coll. South Afr. Mus.

Lycæna Niobe.

Exp. 1 in. 2 lin.—1 in. 5 lin.

♂. Dull cupreous-violaceous; base purplish, and hind-margin rather widely bordered with reddish-brown in both wings; spotless; cilia brownish in fore-wing, but white at apex, in hind-wing brownish, with white tips throughout. Underside.—Dusky brownish-grey; ocelliform spots black, with pale-grey rings, arranged as in *L. Catharina*, but no ocellus in discoidal cell of fore-wing, and the outer row of spots hardly visible in either wing; space between the two rows marked by a hoary-greyish band; close to hind-margin, a row of very indistinct, darker, lunular spots. Hind-wing: between 2nd and 3rd median nervules, close to hind-margin, a narrow, blackish dot, tipped with ferruginous internally, with greyish-blue externally; row of ocelli interrupted, in one specimen nearly obliterated.

♀. Violet brighter and better defined than in ♂, forming a patch on inner marginal half of both wings, rising very little above median nervure, and extending a little beyond middle. Underside.—As in ♂; spots more conspicuous, especially that between 2nd and 3rd median nervules of hind-wing, in which the ferruginous and blue colouring is distinct.

Allied to *L. Catharina*, but very readily distinguished by its sombre colouring and lack of orange lunules in hind-wing. This is a rare and local insect, three specimens taken at Knysna being the only examples I know of. It frequents hill-sides, and in flight and appearance resembles a small *Satyrus*.

Hab. Knysna.—Coll. mihi.

Lycæna Knysna.

Exp. 10 lin.—11 lin.

♂. Dull-violet, with a silky gloss; hind-margin of both wings rather widely bordered with blackish; cilia broad, whitish. Fore-wing: costa very narrowly edged with a white line. Underside.—Whitish-grey; ocelli blackish, whitish-ringed; in both wings a

sinuate row of ocelli beyond middle, a whitish-edged fuscous streak closing discoidal cell, a distinct ocellus in cell (sometimes an indistinct ocellus below it), and two rows of pale-fuscous, indistinctly whitish-edged, lunular spots along hind-margin. Hind-wing: 3 minute ocelli near base, forming with that in discoidal cell a short row across wing; base blackish-dusted.

♀. Shining greyish-brown; inner-marginal area of both wings more or less dusted with violet-blue from base. Fore-wing: a fuscous line closing discoidal cell. Underside.—Quite similar to that of ♂, but all the spots more conspicuous, especially the marginal lunular rows. Fore-wing: spot below that in discoidal cell always present, often distinct.

A specimen of the ♀ (taken in copulâ) in my collection is darker on upperside than usual, with faint-bluish marking, and with two or three faint-fuscous, outwardly whitish-edged spots near anal angle: the underside much darker and browner; the spots larger, blacker, conspicuously white-edged, as are also the rows of marginal lunules; hind-wing with an additional ocellus at base, a longitudinal, conspicuous, whitish dash from disco-cellular streak to inner row of lunules, of which row the three next anal angle are black. Mr. W. S. M. D'Urban has met with precisely similar specimens in very distant localities, so that it would seem to be a permanent variety of the species.

This species is allied to *L. Acca*, Westw., but both sexes are readily distinguished from it by the paler and more conspicuously spotted underside and whiter cilia; and the ♂ by its more violet upperside, with dark margins, four times as broad as those of the ♂ *Acca*. The orange lunule inwardly bordering a black spot near anal angle of hind-wing, often so conspicuous in both sexes of *L. Acca*, is never found in *Knysna*. The ♂ bears considerable resemblance above to the ♂ *L. Ægon*, W. V.

Not uncommon at Knysna and Plettenberg Bay; local, haunting waste ground, especially stubble-fields.

Hab. Cape Town, Knysna, Plettenberg Bay; Coll. mihi.—King William's Town, Graham's Town, Keiskamma River, near Bodiam, Port Elizabeth; Coll. W. S. M. D'Urban.

Genus Zeritis, Boisd.

Zeritis Crœsus.

Exp. 1 in.—1 in. 3 lin.

♂. Red, inclining to orange, not brilliant; with shining dark-brown margins. Fore-wing: base suffused with dark-brown;

border wide along costa and hind-margin, and very broad in apical region (almost reaching extremity of discoidal cell); two spots in cell, and a quadrate one closing it, all touching costal border, and dark-brown; two similar spots between 2nd and 3rd median nervules, one just beneath extremity of cell, the other more or less incorporate with hind-marginal border; cilia narrow, white, interrupted with brown. Hind-wing: costa from base widely, hind-margin very narrowly, bordered with dark brown; a fuscous streak closing cell; a sub-marginal row of blackish lunular marks, more or less distinct; anal angle prominently lobed, ferruginous-red, marked with a gilded dot, bearing a short, slightly-twisted, acute tail of the same hue, white-tipped, on sub-median nervure; cilia mingled greyish and ferruginous. Underside.—Forewing: dull orange-yellow, very pale on inner-margin; border varying from cinereous to ferruginous-brown; spots in and bordering discoidal cell, transverse row of spots beyond middle, and row of dots on costa, all with large, brilliant, greenish-golden centres; below median nervure, a large, dull-black, whitish-centred, gold-dotted spot; a white, gold-dusted streak on bend of costal edge at base; a sub-marginal row of indistinct golden dots. Hind-wing: varies in tint like border of fore-wing; three transverse rows of small golden spots, some of which are indistinct, the middle row including a golden streak closing cell; a dark-brown, transverse shade near hind-margin, ending on inner-margin with a golden streak.

♀. Dull orange-yellow; brown borders paler, narrower. Fore-wing: base more widely suffused with brown, mingled with ochreous; apical border not half as wide as in ♂; spots in and about cell larger; beyond middle, a zigzag row of small, quadrate, brown spots across wing. Hind-wing: base dark-brown to extremity of discoidal cell; costa broadly bordered; hind-margin edged with a brown line; sub-marginal lunular row well marked, the lunules contiguous; a more or less incomplete row of small spots a little beyond middle, like that in fore-wing. Underside.—Quite like that of ♂; rather paler; spots larger, the gilding slightly paler but not less brilliant.

Antennæ, in both sexes, marked beneath with a conspicuous, broad, white bar, just at the base of the club.

This very beautiful species plainly belongs to the *Alphæus* section of *Zeritis*,—that most characteristic South African genus of butterflies. Though so much smaller, *Z. Crœsus* seems the more typical form of the two, the elbowing of the fore-wing and the anal-angular lobe and tail being much more prominent than in *Alphæus*. At the same time these very characters, conjoined

with its upper-surface spots and under-surface gilding, render it a beautiful link between the unspotted, ungilded *Alphæus* and the angulate-winged *Z. Palmus*, Cram., and *Thysbe*, Linn., which possess both spotting and gilding in an eminent degree.

Hab. Natal (Guienzius); Coll. Brit. Mus.—Natal (Döhne); Coll. South Afr. Mus.—King William's Town ("very abundant"); Coll. W. S. M. D'Urban.

Zeritis Mars.

Exp. 11 lin.—1 in. 3 lin.

Bright orange-yellow, not metallic; with dark-brown margins.

♂. Fore-wing: base fuscous; yellow on costa paler, mixed with grey; a broad dark-brown border commences abruptly on costa a little before extremity of discoidal cell (where there is a small, more or less distinct, brown spot), widens considerably at apex, and continues evenly, though less broadly, to anal angle. Hind-wing: a small dark dot, often indistinct, closing discoidal cell; another similar spot, often rather larger, near anal angle, just above sub-median nervure; a large, dark-brown, semi-circular, marginal space in apical region, very abruptly narrowing into a streak (internally dentate) along hind-margin; a short, acute, anal-angular projection of outline at extremity of sub-median nervure. Underside.—Costa and apex of fore-wing, and whole of hind-wing, greyish-, brownish-, ferruginous-, or sanguineous-ochreous. Fore-wing: two black spots in discoidal cell, and one closing it, with brilliant silvery-white centres; an irregular transverse row of similar spots beyond middle; a marginal, blackish, macular band, almost obliterated in its upper half, but broad and well-marked towards inner margin. Hind-wing: three sinuate rows of glistening, sub-metallic dots across wing,—the first, before middle, including a mark closing discoidal cell, the third less shining, merged towards costa in a darker shade; two glistening dots near base, one below costal nervure, the other in cell.

♀. Very similar. Fore-wing: basal suffusion much paler, mingled with ground-colour; dark border on costa more deeply excavating ground-colour immediately beyond discoidal cell. Hind-wing: spot near anal angle sometimes wanting; anal-angular projection blunted, rounder than in ♂. Underside.—Colouring more vivid than in ♂, similarly variable, spots more conspicuous. Cilia in both sexes glistening-greyish, in hind-wing varied with ferruginous or sanguineous.

A ♀ specimen in my collection has the brown border of fore-

wing so widened as to occupy the outer two-thirds of the whole area, with the exception of an indistinct orange spot on disc; while the brown marginal space in hind-wing is much larger than usual, as well as the spot near anal angle.

Zeritis Mars is closely allied to *Z. Pierus*, Cram., but is distinguished by its brighter, paler ground-colour, occupying a larger area; its sharper anal-angular projection on hind-wing; want of the row of spots on hind-margins of underside; generally smaller size, &c. The undersides of the two species are, however, very similar, and equally subject to variation in hue. *Z. Mars* was not uncommon at Knysna, though almost confined to the hills, haunting bare sandy spots.

Hab. Knysna; Coll. mihi.—Fort Murray and Fort Hare, British Kaffraria; Coll. W. S. M. D'Urban.

Zeritis Aglaspis.

Exp. 11 lin.—1 in. 4 lin.

♂. Blackish-brown, with a dull-orange space in each wing; cilia broad, conspicuously white and black chequered. Fore-wing: paler near base; orange longitudinal marking covers the three median nervules from their origins, but ends abruptly before hind-margins; an elongate yellowish spot, touching orange space, closes discoidal cell; sometimes a faint, suffused orange dot near apex. Hind-wing: close to hind-margin, from discoidal nervule to sub-median nervure, an orange band, crossed by dark nervules which dentate it both internally and externally; base and inner margin paler. Underside.—Apex of fore-wing and whole of hind-wing cinereous or reddish-cinereous, varied with brown, and marked with glistening whitish-silvery spots. Fore-wing: orange-yellow; inner-margin very much paler, white at anal angle; two black-ringed whitish-silvery spots in discoidal cell, and another closing it; two similar dots close to costa beyond middle; a conspicuous, oblique, silvery streak from apex commences a bi-angulate row of silvery dots extending to 3rd median nervule; a macular stripe close to margin, silvery-white in its upper, fuscous in its lower half. Hind-wing: nervures pale cinereous; whitish-silvery marks thinly black-edged; a dot at base; two in cell, and a large triangular spot closing it; two streaks from costal converge to sub-costal nervure; beyond middle, a transverse, zigzag, macular stripe from costa to inner margin; a row of very acute, contiguous lunules along hind-margin, sometimes bordered inwardly with a rosy-ferruginous streak. Cilia white chequered ochreous-brown in both wings.

♀. Paler, duller. Fore-wing: orange spot near apex distinct, elongate-lunular, and united to central orange space by two similar lunular marks below it. Hind-wing: orange band very slightly dentate on either edge. Underside in every respect like that of ♂.

The relations of this species to others of the genus are very curious and interesting. Its colouring and underside markings give it considerable resemblance to *Z. Thyra*, Linn., from which it is at once distinguished by the broad, conspicuous cilia, the narrowness of the orange in hind-wing, and the different arrangement and far greater brilliancy of the whitish-silvery under-surface markings. In structure, however, it differs widely from *Thyra*,—the palpi being stouter, blunter, more porrect, the antennæ shorter, more gradually incrassate, the thorax less robust, the fore-wings less acute, and the hind-wings without any elongation in anal-angular region, indeed the abdomen is very nearly (in the ♀ within ¼ lin.) as long as inner margin. The last character, as well as the roundness of the wings and broad cilia, indicate some affinity with *Z. Protumnus*, Linn., while the others are nearly those presented by *Z. Thero*, Linn., which is totally different in form of wings. The antennæ coincide more closely with those of *Z. Pierus* and *Z. Mars* than of other species.

I discovered this very distinct and handsome species in March, 1860, on the hills near Cape Town. I at first took it for a finely-marked *Thyra*, as it pitched on the ground and on stones. It is extremely local, but common in its favourite haunts; and is often to be taken with the fingers, never flying more than a few yards when roused.

Hab. Cape Town.—Coll. mihi.

HESPERIDÆ, Leach.

Genus Ismene, Sws.

Ismene Stella.

Exp. 1 in. 10 lin.—2 in. 1 lin.

♂. Dull ochreous-brown. Fore-wing: an orange mark on costa at base. Hind-wing: much darker than fore-wing, especially at anal angle, and clothed with orange hairs except near costa and hind-margin; cilia orange from anal angle for more than half the extent of hind-margin, fading thence into greyish. Underside.—Tinged with bronzed-green. Fore-wing: on inner-margin, about middle, a dull-whitish space. Hind-wing: before

anal angle, between 3rd median nervule and sub-median nervure, an orange-red marking, divided by a black band; below this mark, an orange spot on inner margin; orange fringe as above.

♀. Rather paler; the orange colouring much paler. Underside.—Fore-wing: no whitish space.

Hab. Port Natal.—Coll. Brit. Mus.

Genus Pyrgus, Hübn.

Pyrgus Elma.

Exp. 10 lin.—1 in. 1 lin.

Dark-brown, varied with lighter, and with vitreous and white spots. Fore-wing: dark as far as middle, which is crossed by a curved blackish streak; beyond streak the wing is light-brown, with some darker shades and dashes; a vitreous streak closes cell, contiguous to blackish streak; near it, between 1st and 3rd median nervules, two small vitreous spots, the lower one larger, quadrate; a transverse line of three contiguous, minute, vitreous spots on costa, not far from apex; cilia varied light and dark brownish. Hind-wing: almost black; a small, round white spot in discoidal cell, near base; about middle, a conspicuous, rather wide, white band, from 1st sub-costal nervule to sub-median nervure; traces of a sub-marginal row of whitish dots; anal-angular region hoary; cilia whitish, varied greyish and dark-brown. Underside.—Rather glossy, much paler; dull brownish-ochreous. Fore-wing: vitreous marks as above; an indistinct sub-marginal row of whitish dots. Hind-wing: an additional white dot above that in cell, the two forming a short, transverse streak; white band commences on costa; whitish at anal angle, extending along inner margin, sometimes conspicuous.

The ♀ is paler than the ♂.

Pyrgus Elma differs from all other South African species of the genus I have seen in the presence of vitreous, and *want of white spots* in the fore-wings; but the hind-wings are quite like those of an ordinary *Pyrgus*. The vitreous markings and brownish fore-wings seem to indicate an approach to *Nisoniades* (*Thanaos*). Haunts sandy spots and pathways in bushy places, outskirts of woods, &c.

Hab. Mossel Bay, Knysna, Plettenberg Bay; Coll. mihi.—King William's Town; Coll. W. S. M. D'Urban.—Cape of Good Hope; Coll. of Hesperidæ (Boisduval's?) in Brit. Mus.

I possess four, if not five, distinct South African species of

Pyrgus,—one of which appears to be Cramer's *Vindex;* but have hitherto found it impossible to ascertain whether the Linnæan and Fabrician descriptions really apply to any of them. In my present state of uncertainty regarding them, I think it better to defer describing them until more complete investigation. I entirely agree with Dr. Boisduval's remarks in his "Faune Entomologique de Madagascar," that "il est à-peu-près impossible de reconnoître la plupart des Hespéries de Fabricius, d'après ses descriptions incomplètes; il arrive très-souvent qu'une de ses phrases Latines convient à une vingtaine d'espèces."

Genus Nisoniades, Hübn.

Nisoniades Umbra.

Exp. 1 in.

Dark-brown, dusted with yellowish and whitish scales; a few small vitreous spots. Fore-wing: a conspicuous darker triangle,—its broad base on inner margin, its apex on costal nervure,—a little before middle; on the outer edge of this marking are a sub-diaphanous spot close to costa, and a vitreous litura (like a ? reversed) bordering it between 1st median nervule and sub-median nervure; a smaller dark triangle on costa rather beyond middle, its base on 1st median nervule, outwardly edged by a line of 3 small vitreous dots; traces of a sub-marginal dark streak from apex; cilia greyish, interrupted with dark-brown. Hind-wing: a vitreous or sub-diaphanous dot about extremity of discoidal cell, sometimes obsolete traces of two darker fasciæ about middle; cilia as in fore-wing. Underside.—Dull-ferruginous; vitreous spots as above. Fore-wing: edges only of dark triangles faintly indicated; about extremity of cell a brighter, almost orange space. Hind-wing: fasciæ more distinct, sometimes well marked.

The hind-margins of the wings of this sombre little species are rather more dentate than in others of the genus; there is a marked indentation of outline a little above anal angle of fore-wing, and two others in upper half of hind-margin of hind-wing. In general appearance and in its habits it reminds one of *N. Tages*, Linn. It was rather rare at Plettenberg Bay, frequenting stony footpaths on hill-sides. Mr. D'Urban has met with it abundantly on the Eastern frontier.

Hab. Plettenberg Bay; Coll. mihi.—King William's Town; Coll. W. S. M. D'Urban.—Butterworth, Kaffraria (J. H. Bowker); Coll. South Afr. Mus.

Genus Pamphila, Fab.

Pamphila Micipsa.

Exp. 1 in. 5 lin.—1 in. 8 lin.

♂. Glossy-brown, tinged with olivaceous; marked with vitreous spots. Fore-wing: 2 vitreous spots in cell, near its extremity; beyond middle, a transverse elbowed row of 6 vitreous spots, the 2 next costa minute, the last largest, above 3rd median nervule; sexual oblique marking short, linear, whitish, reaching from last vitreous spot to sub-median nervure. Hind-wing: 2 vitreous dots beyond middle between 2nd sub-costal and 1st median nervules; clothing of hairs towards inner-margin olivaceous. Underside.—Paler, irrorated with olivaceous. Hind-wing: a whitish, sub-diaphanous dot in discoidal cell; 2 similar, smaller dots beyond middle,—one above, the other below, 2 vitreous dots.

♀. Paler. Fore-wing: in place of the streak peculiar to ♂ is a vitreous spot, continuous of the transverse row.

This species is nearly allied to *P. Borbonica*, Boisd., described and figured in "Faune Ent. de Madagas.," but is distinguished from it by the well-marked vitreous spots in discoidal cell of fore-wing, and the two in hind-wing, all of which are wanting in *Borbonica*, which is also without the whitish spot on underside of discoidal cell of hind-wing; the ♂ of *Borbonica*, as appears from a Mauritian specimen in the South African Museum, is devoid, too, of the oblique discal streak observable in the same sex of *P. Micipsa*,—its position being occupied by a vitreous spot. I found *P. Micipsa* very rare at Knysna, only taking one specimen of each sex: it frequented the marshes bordering the river-lagoon.

Hab. Knysna.—Coll. mihi.

Pamphila Erinnys.

Exp. 2 in. 1 lin.

Dark-brown; with yellow-ochreous and vitreous spots. Fore-wing: from base, along inner-margin, a clothing of short, yellow hairs; 2 small, quadrate, vitreous spots at extremity of discoidal cell; 3 small similar spots form a short streak from costa, between middle and apex; below them, from origin of 2nd median nervule to sub-median nervure, a row of 3 larger, vitreous spots (the lowest tinged with yellow) inclining towards middle of inner-margin. Hind-wing: clothed with yellow hairs from base; an angulated, transverse, macular, yellow-ochreous band from near costa to middle of sub-median nervure,—the first three spots

separate; a yellow space at anal angle, extending narrowly along hind-margin. Underside.—Paler. Fore-wing: a whitish mark on costa, above disco-cellular vitreous marks; a dentate, sub-marginal, pale yellow-ochreous streak from costa. Hind-wing: two pale, dull-ochreous, macular bands across central region; some scattered spots at base; anal-angular and marginal yellow-ochreous marking paler than above.

A single specimen of this fine *Pamphila* is in the British Museum.

Hab. Port Natal.—Coll. Brit. Mus.

XXI. *Descriptions of Nine Exotic Species of the Genus* Gracilaria. By H. T. Stainton, Esq., F.L.S. &c.

[Read Jan. 6th, 1862.]

In preparing the eighth volume of the "Natural History of the Tineina," my attention has been drawn to the species of *Gracilaria* which occur out of Europe; and finding that I had at least nine species which seemed referable to this genus, I thought that a short paper descriptive of them, and illustrated by a plate, might be acceptable for the Transactions of this Society.

In structure all the nine species present a wonderful accordance, only two being at all aberrant, and those not to a sufficient extent to warrant the creation of new genera.

Four of these insects have been made known to us by the labours of Mr. Sylvester Diggles, at Moreton Bay (Figs. 1, 2, 3 and 7); for the remaining five I have to thank Mr. Atkinson, of Calcutta. To all the beauties of form which prevail throughout the genus *Gracilaria*, it will be seen that most of these insects superadd the charms of colour and marking.

Gracilaria formosa, n. sp. (Pl. X. fig. 1.)

Alis anticis puniceis, strigis septem obliquis costalibus albis (quarum tres posteriores obscure marginatæ), quinque dorsalibus dilute luteis albidisve, strigaque apicis alba cum puncto nigro.

Exp. al. 5—5½ lin.

Head pale-yellow or whitish, with a crimson streak down the centre and at the sides. Face white, slightly speckled with crimson. Maxillary palpi white, with a faint crimson tinge.

Labial palpi white, more or less suffused with crimson, and indistinctly marked specimens with three small black spots externally. Antennæ pale fuscous, the basal joint in front pale yellow, behind and the tip crimson.

Anterior wings crimson, with seven oblique white streaks from the costa, and five from the inner margin (the first four on the inner margin are frequently yellow), and with a white streak at the apex, in which is a black spot. The four first costal streaks are of rather irregular form, and not dark-margined; the 5th, 6th and 7th are more regular in form, distinctly dark-margined, and their lower portion is suffused with the crimson ground-colour; the intervening costal space between the 5th and 6th streaks is also whitish. The first dorsal spot is very small; the second reaches to the fold (though sometimes the upper part of it is detached from the base); the third and fourth cross the fold, and are there whiter (less yellow) than on the inner margin; the fifth streak is a slender white one at the anal angle, and is rather indistinctly dark-margined. Before the apex is a curved white streak, in which there is a distinct round black spot, from beyond which two crimson rays intersect the pale yellow cilia. Cilia of the inner margin grey.

Posterior wings dark grey, with grey cilia.

Thorax yellowish-white, with the sides and a central streak crimson, sometimes much suffused with crimson. Abdomen greyish-fuscous, beneath silvery.

Anterior legs with femora silvery, spotted with crimson; tibiæ crimson; tarsi—first joint crimson, with the apex dark fuscous; other joints white, tipped with fuscous. Middle legs with the femora and tibiæ crimson, speckled with white; tarsi white, spotted with brown-black. Posterior legs beneath silvery, above with the tibiæ pale-fuscous, and the tarsi whitish, spotted with black.

A variable insect; in some specimens the crimson ground-colour is very bright; in others it is much suffused with grey, and looks dingy; the dorsal spots also vary from white or whitish to canary-yellow.

It is a true *Gracilaria* in every respect, and when alive must be magnificent.

All the specimens I have seen were captured by Mr. Sylvester Diggles, at Moreton Bay, North Australia.

In the Collection of the British Museum, and in my own.

Gracilaria plagata, n. sp. (Pl. X. fig. 2.)

Alis anticis ochraceo-griseis, olivaceo-tinctis, fascia obliqua

saturatiore pone medium, et post eam plaga magna cæruleo-nigra, fascia tenui recta alba ante punctum apicali nigrum. Exp. al. $5\frac{1}{2}$ lin.

Head greyish-ochreous, with a faint olive tinge. Face pale greyish-ochreous. Maxillary palpi white, spotted with dark fuscous. Labial palpi white, with the base of the 2nd joint and two spots on the terminal joint dark fuscous. Antennæ pale fuscous, with darker annulations; the 2nd joint elongate, pale ochreous-grey in front, dark fuscous behind.

Anterior wings greyish-ochreous with a faint olive tinge, with an oblique, darker fascia beyond the middle, followed by a large, irregularly-shaped blue-black blotch; before the apical black spot is a slender whitish fascia, perpendicularly placed. The basal portion of the wing is rather irregularly marbled on a paler ground-colour, the first defined marking being the oblique fascia, which is anteriorly edged with blackish, and broadest on the inner margin; the blotch beyond this begins on the disc, sharply edged with black; it then extends to the costa, along which it attains a considerable breadth, enclosing (on one wing) a small costal spot of the pale ground-colour; it slopes gradually towards the inner margin, which it reaches just at the anal angle; its outer edge is pretty well defined by black scales, and it is followed immediately by a slightly oblique fascia of the pale ground-colour towards the costa, but much suffused towards the inner margin. Then follows a fuscous patch nearly of the colour of the central fascia; it is intersected by an oblique black streak, beyond which is the slender, dark-margined, perpendicularly-placed, white fascia; at the apex is a minute black spot. Cilia olive-brown, paler towards the tips, intersected by two blackish lines; cilia of the inner margin dark grey.

Posterior wings dark grey, with grey cilia.

Thorax greyish-ochreous, with a faint olive tinge.

Anterior legs: femora and tibiæ dark brown; tarsi white, spotted with dark brown. Middle legs: femora whitish-grey; tibiæ dark brown; tarsi white, spotted with dark brown. Posterior legs: femora and tibiæ whitish-grey; tarsi whitish, spotted with dark fuscous.

A true *Gracilaria*, reminding one slightly of *G. Syringella*.

I have only seen a single specimen (of which the abdomen is wanting); it was captured by Mr. Sylvester Diggles, at Moreton Bay, North Australia.

In my own Collection.

Gracilaria albo-marginata, n. sp. (Pl. X. fig. 3.)

Alis anticis saturate griseis dorso niveo, costa pone medium anguste nivea, puncto apicis atro, postice nigro circumcincto.
Exp. al. 4½ lin.

Head white, with a few grey scales. Face white. Labial palpi white, with a dark grey ring before the apex of the 2nd joint, and with the base and tip of the terminal joint greyish. Maxillary palpi white, very minute. Antennæ white, with grey annulations.

Anterior wings dark brownish-grey, with a narrow white stripe all along the inner margin, and with the costa narrowly white from the middle to near the apex. The margins of these streaks are not sharply defined; that on the inner margin especially is very jagged, making several indentations into the dark portion of the wing; at the apex is a minute black spot, with a bluish tinge in certain lights; the hind margin is expressed in black scales. Cilia grey, intersected by a row of blackish scales round the hind margin, and with a tendency to a small projecting blackish hook.

Posterior wings grey, with greyish-brown cilia.

Anterior legs with white femora; the tibiæ dark grey externally, white internally; the tarsi white, with two broad, dark grey blotches. Middle legs: femora white; tibiæ dark grey, with white blotches; tarsi white. Hind-legs whitish; tarsi white, spotted with dark grey. All the legs have an unusually hairy appearance.

This appears to be one of the smaller *Gracilaria*, with ill-developed maxillary palpi; but the only specimen I have seen has the antennæ broken and the abdomen wanting, and the thorax too injured for description.

The insect has considerable resemblance with some of the phases of *Lyonetia padifoliella*, but it cannot be referred to the genus *Lyonetia*.

The specimen described was captured by Mr. Sylvester Diggles, at Moreton Bay, North Australia.

In my own Collection.

Gracilaria resplendens, n. sp. (Pl. X. fig. 4.)

Alis anticis læte brunneis, maculis tribus transversis nitide albis, prima ac secunda trigonales, tertia sub-quadrata.
Exp. al. 4½ lin.

Head white, with a small ochreous white tuft on each side above

the eyes. Face whitish. Maxillary and labial palpi whitish. Antennæ longer than the anterior wings, dark grey; the basal joint rather thickened, and above with a short projecting tuft of grey scales as in *Coleophora*.

Anterior wings rich yellowish-brown, with three large transverse pearly-white spots. The first somewhat triangular, near the base, broadest on the inner margin, its apex only just reaching the costa; the second more completely triangular, nearly in the middle of the wing, its base on the inner margin, its apex almost reaching the costa, but not touching it; the third spot is towards the apex, rather obliquely placed, and rather broader on the costa than on the inner margin; all three are dark-margined on both sides; beyond the black outer margin of the last spot are two black streaks in the pale brown cilia; cilia of the inner margin grey.

Posterior wings dark grey, with grey cilia.

Legs white, the ends of the tibiæ dark grey and the tarsi spotted with grey.

Excepting in the tufts on the sides of the head, and the tuft at the basal joint of the antennæ, this appears to be a true *Gracilaria*.

In the only specimen I have seen the abdomen is wanting, the thorax is too injured for description, and the legs are not in such good condition as one would wish.

It was captured near Calcutta by Mr. Atkinson, who kindly gave it to me.

In my own Collection.

Gracilaria quadrifasciata, n. sp. (Pl. X. fig. 5.)

Alis anticis albis, fasciis quatuor luteo-brunneis obliquis, tertia cum quartâ a strigula discoidali connexa, squamisque sparsis nigris.

Exp. al. 3 lin.

Head and face whitish. Labial palpi white, faintly spotted with pale grey. Maxillary palpi imperceptible. Antennæ white at the base, then fuscous, with paler annulations.

Anterior wings white, with four rather oblique tawny-brown fasciæ (the 3rd and 4th united by a streak along the disc), and between them a few scattered black scales; the first fascia lies near the base and is rather furcate towards the costa, inclosing a white spot there; the second fascia is placed a little before, and the third a little beyond the middle; from the middle of the latter a tawny-brown streak runs along the disc, connecting it with the fourth fascia; this on one wing (the right one) is rather clearly

furcate on both margins, but on the other wing this tendency is hardly perceptible; in the apex is a small violet spot; cilia pale grey, intersected by some dark scales round the hind margin.

Posterior wings grey, with paler cilia.

Abdomen above grey, beneath pearly-white, with black bars.

Anterior legs: tibiæ white, with a dark grey patch at the base and another at the tip; tarsi white, spotted with black; middle legs—femora whitish; tibiæ white, with two black blotches; tarsi white, with black spots. Posterior legs: femora whitish; tibiæ and tarsi white, with black spots.

I believe this to be a true *Gracilaria*, though of the smaller group, in which sometimes the maxillary palpi are undeveloped. It reminds one considerably of the European *G. Cupediella*.

I have before me eleven specimens bred from larvæ found near Calcutta by Mr. Atkinson, who kindly sent them to me.

Five were bred from larvæ mining the *under* side of the leaves of *Urena lobata;* six were bred from larvæ mining the *upper* side of the leaves of another plant (name unknown), but the perfect insects appear identical.

I annex Mr. Atkinson's descriptions of the two larvæ:—

"Larva Mining Leaves of Urena lobata, May 25th, 1856.—Very pale whitish-green, dorsal vessel deep green; head small; jaws light chesnut; legs concolorous with the body.

"The larva first detaches the lower cuticle for the full extent of the mine, and then proceeds to devour the parenchyma."

"Larva on ——————? June 4th, 1856.—Of a uniform brilliant amber-yellow, transparent, smooth, with slight depressions on the sides of each segment; jaws reddish; the alimentary canal, when full, gives the appearance of a deep green band down the back.

"The larva at first mines a very irregularly-contorted gallery under the upper cuticle, and whilst engaged in this operation it only consumes the juices which unite the cuticle with the parenchyma. Gradually the greater part or the whole of the surface occupied by this gallery is mined, so as to form one chamber. The upper cuticle becomes wrinkled, and slightly contorts the leaf, so as to form a spacious apartment, and the larva proceeds to devour the parenchyma. The leaf is not discoloured, but appears blotched with white, from the colourless upper cuticle.

"When full grown the larva quits the mine, and forms a compact orange or vermilion coloured cocoon, in a depression of a leaf, or any other convenient place. After a few days the pupa thrusts one end through the cocoon, and the moth escapes."

Gracilaria Gemoniella, n. sp. (Pl. X. fig. 6.)

Alis anticis costam versus fuscis, dorsum versus albis, strigula alba costæ pone medium, strigula fusca dorsi ad angulum analem, macula magna apicis alba.

Exp. al. 3 lin.

Head white, with a few fuscous scales. Face white. Maxillary palpi white. Labial palpi white, the tip of the second joint dark grey. Antennæ fuscous, annulated with white.

Anterior wings pale brown along the costa, white along the inner margin; the division of colour runs nearly along the fold, only in the middle and just beyond are two rounded white projections on the costal side of the fold; beyond these is a short white oblique streak from the costa, and below it a slender pale brown streak runs to the anal angle—beyond which a white blotch occupies nearly the whole of the tip of the wing, the costa being only narrowly brown—at the apex is a short curved black streak. Cilia white, with the tips grey, intersected by a short black streak, opposite the apex of the wing; cilia of the inner margin pale greyish-brown.

Posterior wings dark grey, with paler cilia.

Abdomen brownish above, whitish beneath.

Anterior legs: femora and tibiæ white; tarsi white, with dark grey spots. Middle legs: femora whitish; tibiæ white, with a dark grey patch at the tip; tarsi white, spotted with pale grey. Hind legs: femora whitish; tibiæ pale fuscous; tarsi dark grey, with white spots.

I have only seen one specimen, of which the antennæ are partly broken, and the thorax invisible on account of the pin. It is a true *Gracilaria*, and is closely allied to *Scalariella*, being similar in colour and markings, though so much smaller. The large subapical spot in *Gemoniella* is the most striking distinctive character, as in *Scalariella* that portion of the wing is nearly all brown. In *Scalariella* the anterior tibiæ are almost black.

This insect was bred by Mr. Atkinson from a larva found near Calcutta, at the end of July, mining the upper surface of a leaf of some plant (name unknown).

Gracilaria Calicella, n. sp. (Pl. X. fig. 7.)

Alis anticis luteo-brunneis, fasciis duabus, maculis duabus costæ parvis, macula majore dorsi, strigulaque obliqua apicis albis.

Exp. al. 3 lin.

Head and face white. Maxillary and labial palpi white. Antennæ grey, with hardly perceptibly paler annulations.

Anterior wings pale golden-brown, with several distinct white markings, namely, two fasciæ, two small costal spots, one large dorsal spot, and an oblique apical streak. The first fascia is near the base, rather obliquely placed, being nearest the base on the inner margin, it is not dark-margined; the second fascia is rather obliquely placed, of irregular form, broadest on the fold and much attenuated towards the costa, it is distinctly dark-margined; the two costal spots are both small, especially the second, rather obliquely placed and dark-margined; between them, on the inner margin, is the much larger dorsal spot, only dark-margined on its anterior edge; the oblique apical streak begins on the costa beyond the second costal spot, and runs out in the middle of the hind margin; it is very distinctly dark-margined on its anterior edge. Cilia pale grey, intersected by a cup-shaped black streak.

Posterior wings grey, with paler cilia.

Abdomen grey above, beneath pearly white, with dark grey bands.

Anterior legs: femora whitish, with a dark grey blotch; tibiæ blackish; tarsi white, with black spots. Middle legs: femora and tibiæ whitish; tarsi white, with black spots. Posterior legs: femora whitish; tibiæ pale grey; tarsi white, with black spots.

This is a true *Gracilaria*.

I have only seen one specimen (of which the thorax is imperceptible from the pin). It was captured by Mr. Sylvester Diggles, at Moreton May, North Australia.

In my own Collection.

Gracilaria Terminaliæ, Atkinson, in litt. (Pl. X. fig. 8.)

Alis anticis saturate brunneis, fasciis duabus, prima ad dorsum cum basim connexa, secunda fere recta in medio, strigulaque sub-apicali costæ albis; interdum puncto costali pone medium albido valde obsoleto.

Exp. al. 3 lin.

Head and face white. Maxillary palpi white. Labial palpi white, with the tip of the second joint grey. Antennæ dark fuscous, with the basal joint white.

Anterior wings rich dark-brown, with two white fasciæ, broadest on the inner margin, and with a white costal spot towards the apex. The first white fascia is near the base and is connected with the base along the inner margin, it is much attenuated on the costa; the second fascia is nearly in the middle of the wing, and tapers gradually towards the costa; both these are dark-

margined on both sides. Beyond the second fascia is a minute costal spot, sometimes imperceptible or only revealed by faint indications of its dark margins; just before the apex is the distinct costal white spot slightly curved, and terminating a little beyond the anal angle; in the extreme apex are yet a few whitish scales, followed by a curved black line; cilia brownish grey.

Posterior wings grey, with greyish fuscous cilia.

Thorax white. Abdomen grey above, beneath white, with dark grey bands.

Anterior legs: femora white, tibiæ dark grey, tarsi white, spotted with black; middle legs—femora white, spotted with dark grey; tibiæ white, with a grey spot in the middle, and a larger dark grey spot at the tip; tarsi white, spotted with dark grey. Posterior legs: femora white, spotted with dark grey; tibiæ dark grey, with the base and tip white; tarsi white, with large dark grey spots.

A true *Gracilaria*. I have before me four specimens bred by Mr. Atkinson, from larvæ found near Calcutta, mining the under side of the leaves of *Terminalia Catappa*.

Mr. Atkinson describes the larva as "small but very active. It detaches the lower cuticle over a wide extent of surface: it devours both layers of parenchyma, not continuously, but in very small oblong patches, so that the upper surface of the mined portion of the leaf, which is blotched with purple, appears thickly sprinkled over with white dots. The lower cuticle, which is detached, is very thin and transparent, and, by slightly contracting, it curves the upper portion of the leaf, so as to form a very spacious vaulted chamber for the little resident."

"On attaining its full growth, the larva leaves the mine and spins in some convenient corner a compact white cocoon."

Gracilaria nitidula, n. sp. (Pl. X. fig. 9.)

Alis anticis olivaceo-fuscis, macula dorsali prope basim, fascia (ad costam attenuata) ante medium, maculis oppositis pone medium, strigulaque obliqua apicem versus margaritaceis.

Exp. al. 3½ lin.

Head and face white. Maxillary palpi white. Labial palpi white, the second joint with two grey spots, one in the middle and one at the tip. Antennæ grey.

Anterior wings bright olive-brown, with pearly white markings,

viz., a dorsal spot near the base, a fascia before the middle, two spots obliquely opposite beyond, and an oblique sub-apical streak. The first spot lies on the inner margin, very near the base, it is very small and not dark-margined; the fascia is broad on the inner margin, but attenuated almost to a point on the costa, it is distinctly dark-margined on both sides; a little beyond the middle is the small rounded costal spot, and obliquely beyond it is the larger dorsal spot, also rounded, both have dark margins; a little before the apex is a short oblique white streak from the costa running into the hind margin; at the extreme apex are a few white scales, followed by some blackish ones; cilia grey.

Posterior wings rather dark grey, with paler cilia.

Thorax white. Abdomen grey above, beneath whitish, with grey bands.

Anterior and middle legs—femora and tibiæ black, with some white spots, tarsi white, spotted with black; posterior legs—femora and tibiæ whitish, tarsi white, spotted with black.

A single specimen is before me. It was captured by Mr. Atkinson, near Calcutta.

XXII. *Characters of New Species of Exotic* Trichoptera; *also of one New Species inhabiting Britain.* By R. M'Lachlan, Esq., F.L.S.

[Read 6th January, 1862.]

The exotic species here described are for the most part contained in the national collection, and are natives of China, Australia and New Zealand.

It has been found necessary to construct several new genera for the reception of species, which, even with the most liberal ideas as to the elasticity of generic characters, will not fit satisfactorily into any already existing genus. This is but an effect of the meagre knowledge we possess of insects of this order from distant quarters. When the wide diversity from European forms exhibited in exotic insects of other orders is taken into consideration, it is not surprising that these should present equal differences, almost unknown as they at present are.

With respect to the geographical distribution of *Trichopterous* families, one very remarkable fact strikes the observer, viz. that apparently no species belonging to the two great families *Phryganidæ* and *Limnephilidæ* are found south of the equator; certainly none have yet been described. These appear to have their metropolis in the cold and temperate regions of the northern hemisphere, and decline in numbers as we proceed south, till in the tropics they are very few, and at the equator seem to disappear entirely. That some may yet be discovered is of course possible, but taking into consideration that they are usually insects of large size, likely to attract attention, I think it certain that if they be not altogether wanting, they must be very scarce.

Fully as many more undescribed exotic species from the old world are contained in the national collection, and a considerable number from North and South America, but as a synopsis of the American *Neuroptera* (including the *Trichoptera*) by Dr. Hagen is on the eve of publication by the Smithsonian Institution,* the determination or description of these latter must be deferred till its appearance.

* This Work has since been published, and contains descriptions of 150 species of North American *Trichoptera*, and a catalogue of 23 species from South America.

Family PHRYGANIDÆ.

Genus Colpomera, n.g.

Male.—Antennæ scarcely so long as the wings, broad, laterally compressed, basal joint very short; head elongated and attenuated posteriorly; eyes prominent, slightly prolonged posteriorly; maxillary palpi with the basal joint very short, three succeeding joints longer, of equal length, the lower side very concave; labial palpi with the first and second joints short, broad, concave below, somewhat pyriform, terminal joint elliptical and longer than the others; prothorax very short; mesothorax oval-elongate, rather angular at the sides; thighs with a deep groove on the inner side, smooth; tibiæ and tarsi strongly spinose, spurs 2.4.4.

Anterior wings sparingly clothed with very short hairs, the costa slightly arched; hind margin very oblique, with three sinuations; the first commencing immediately below the apex, and with the second short, the third long, reaching to the anal angle; veins strong, not differing materially in their arrangement from *Phryganea*, posterior wings with the apex produced and obtusely rounded.

The sinuated hinder margin of the anterior wings will alone readily distinguish this genus.

C. sinensis.

Mas.—Antennis nigris; palpis ochraceis, articulis ultimis nigris, capite oculisque testaceis, his nitidis, obsolete nigro-punctatis; thorace fusco; abdomine brunneo-ochraceo; pedibus testaceis, tibiis serie duplici nigro-maculatis; alis anticis pallide testaceis, confertim fusco-reticulatis et nebulosis, venis apicalibus late fusco-marginatis; posticis aurantiacis, apicibus fuscis.

Long. corp. 9½ lin.; exp. alar. 24 lin.

Male.—Antennæ black; palpi ochreous, the terminal joint of both pairs black; head testaceous, sparingly clothed with short, grey hairs; eyes shining, minutely spotted with black; collar clothed with long grey hairs directed backwards; thorax brownish; abdomen brownish-ochreous; legs testaceous, tibiæ with two rows of black spots, from each spot springs a spine, tips of the tibial and tarsal joints blackish; anterior wings yellowish-brown, thickly reticulated and clouded with fuscous, the terminations of the apical veins broadly margined with fuscous, a conspicuous pale

spot at the base of the third apical cell, veins dark fuscous, the anastomosis at the base of the fourth apical cell, and at the arculus, as well as the thyridium, hyaline, when viewed against the light; posterior wings deep orange, the tips broadly fuscous.

Habitat, North China. In the British Museum.

Fam. SERICOSTOMIDÆ.

Genus Œconessus, n. g.

Male.—Antennæ about the length of the wings, basal joint short, and rather thick, not so long as the head; head quadrate; maxillary palpi oval-elongate, much swollen, curved up in front of the head, their apices, viewed from above, appearing as two rounded tubercles between the antennæ, moderately hairy; labial palpi with the basal joint short, second and third of equal length, long; anterior tibiæ with two short spurs, intermediate and posterior, each with four long unequal spurs.

Anterior wings rather short and broad, very slightly hairy, the costa much arched, apical margin almost straight; the costa from the base to the pterostigma is narrowly folded inwards; discoidal cell long and narrow, the *ramus thyrifer* does not fork before the anastomosis, and from this cause there are only eight apical cells; the anastomosis is complete and very oblique from the third apical cell, the lower part is not connected with the inner margin by a transverse vein, and the last apical cell is continued from the apex to near the base of the wing, the apical portion being very broad; near the base of the third apical cell in all four wings is a small round hyaline spot; posterior wings broad, folded; discoidal cell short and triangular.

This genus, although very characteristic of the family, differs in a marked degree from all others. The anomalous arrangement of the venation is somewhat extraordinary, even in this family, where singularity of structure appears to be the rule.

Œ. Maori.

Mas.—Antennis pallide-ochraceis; oculis nigricantibus vix orichalceo-reticulatis; capite, thorace, abdomineque rufo-brunneis; pedibus rufo-ochraceis; alis anticis ferrugineo-brunneis, confertim albido-irroratis, maculis elongatis ad marginem dorsalem albido et brunneo alternatis; posticis sub-hyalinis, brunneo-tinctis.

Long. corp. 3½ lin.; exp. alar. 10 lin.

Male.—Antennæ pale ochreous; eyes blackish, slightly reticulated with brassy; head, thorax and abdomen reddish-brown; legs reddish-ochreous; anterior wings rusty-brown, thickly irrorated with whitish spots, which are larger towards the base; on the inner margin are three elongated whitish spots, alternating with others of the dark ground-colour; posterior wings sub-hyaline, tinged with brownish.

Habitat, New Zealand.

This insect, at first sight, has a somewhat deceptive resemblance to *Hydropsyche fimbriata*.

Fam. HYDROPTILIDÆ.

Genus Hydroptila, Dalman.

H. albiceps.

Mas.—Antennis griseis, obsolete fusco-annulatis; capite dense cano-piloso; pedibus pallide griseis; abdomine infra argentato; alis anticis saturate griseo-fuscis, pallide irroratis, apicibus manifeste albis; posticis pallide griseis.

Long. corp. 1 lin.; exp. alar. $2\frac{1}{4}$ lin.

Male.—Antennæ grey, faintly annulated with darker; head clothed with dense greyish-white pubescence; thorax fuscous; abdomen brown above, silvery beneath; legs pale grey; anterior wings dark greyish-fuscous, irrorated with pale grey, the extreme apex conspicuously whitish; posterior wings pale grey, the cilia concolorous.

Habitat, New Zealand. In Mr. Dale's collection.

Family LEPTOCERIDÆ.

Genus Ascalaphomerus, Walker.

I have followed Mr. Walker in placing this extraordinary genus in the above family, but the robust form and almost clavate antennæ of the typical species ill accord with the slender and delicate insects on which the family was first founded.

A. finitimus.

Mas.—Antennis haud crassatis, nigris; palpis nigro-pilosis; oculis magnis supra approximatis, brunneo-ochraceis; thorace nigro, utrinque rufo-piloso; abdomine saturate piceo; femoribus piceis, tibiis tarsisque brunneo-ochraceis; alis anticis et posticis glabris, semi-pellucidis, fuligineis, venis sub-costalibus saturatioribus.

Fœm.—Antennis gradatim crassatis ; capite rufo-piloso ; oculis haud approximatis ; pedibus omnino saturate piceis.

Long. corp. 6 lin. ; exp. alar. 17 lin.

Male.—Antennæ black, of nearly uniform thickness throughout ; palpi clothed with long, blackish hairs ; eyes large, approximating above, brownish-ochreous ; thorax black, with a tuft of red hairs on each shoulder ; abdomen dark piceous ; thighs piceous ; tibiæ and tarsi brownish-ochreous ; anterior and posterior wings glabrous, semi-pellucid, smoky fuscous ; sub-costal vein very strong and dark in all the wings, the others scarcely darker than the membrane.

Female.—Antennæ gradually thickened before the apex ; eyes small, distant ; head with a tuft of red hairs on the vertex ; legs entirely piceous ; otherwise similar to the male.

Habitat, North China. In the British Museum.

Differs from the only other described species—*A. humeralis*, Walk.—in its somewhat smaller size, naked and more pellucid wings, and especially by the antennæ of the male not being thickened. In *humeralis* they are thickened in both sexes, but the antennæ of the female are shorter and stouter than in the male in both species.

Genus Pseudonema, n. g.

Female.—Antennæ much longer than the wings, joints cylindrical, the basal joint long and thick ; maxillary palpi hairy, basal joint short, 2nd and 3rd long, of equal length, 4th scarcely so long as the 3rd, and less robust ; terminal joint as long as the 3rd and 4th united, flexible ; labial palpi with the terminal joint long and thin ; head sub-triangular ; eyes prominent ; abdomen robust ; leg-spurs *2. 2. 3* ; anterior wings rather thickly clothed with short hairs, long, narrow, slightly dilated at the apex, which is elongated ; discoidal cell broad ; 1st apical cell much longer than the rest ; 2nd short, scarcely reaching halfway to the anastomosis ; 5th narrow and very acute, barely reaching the anastomosis ; posterior wings folded.

This genus, which has much general resemblance to *Leptocerus*, may be at once distinguished therefrom by the tricalcarate posterior tibiæ, and by the robust abdomen.

P. obsoleta.

Fœm.—Antennis fuscis, subtiliter griseo-annulatis ; palpis griseo-fuscis ; capite thoraceque testaceis ; abdomine griseo-brunneo ;

pedibus griseis, tibiis tarsisque nigricantibus; alis anticis canis; punctis nebulisque saturate griseis; posticis opacis albidis vix iridescentibus.

Long. corp. 6 lin.; exp. alar. 17 lin.

Female.—Antennæ fuscous, narrowly annulated with pale grey; palpi greyish-fuscous; head and thorax testaceous, the metathorax paler; abdomen greyish-brown; legs grey, tibiæ and tarsi blackish; anterior wings very pale grey, clouded and irrorated with dark grey; the most conspicuous markings are an oblique, almost obsolete, transverse fascia before the middle, and an indistinct blotch at the pterostigma; posterior wings semi-opaque, whitish, slightly iridescent.

Habitat, New Zealand. In Mr. Dale's Collection.

Genus Leptocerus, Leach.

L. cognatus.

Antennis saturate brunneis, apicibus articulorum albis; palpis nigris pilis longis griseis; capite thoraceque testaceis; abdomine brunneo; pedibus pallide griseo-ochraceis; alis anticis griseis, parce cano-pilosis; posticis hyalinis, cupreo-iridescentibus.

Long. corp. 4½ lin.; exp. alar. 14 lin.

Antennæ dark brown, with white tips to the joints, basal joint of the same colour as the head; palpi black, clothed with long grey hairs; head and thorax testaceous; abdomen brown; legs pale greyish-ochreous; anterior wings grey, sparingly clothed with hoary pubescence; posterior wings hyaline, with coppery iridescence.

Habitat, Auckland, New Zealand. Collected by Col. Bolton. In the British Museum.

L. canescens.

Antennis nigris albo-annulatis, apicis parte tertiâ omnino albâ; palpis nigris, pilis longis griseis; capite thoraceque testaceis; abdomine pallidiore; pedibus pallide ochraceis; alis anticis canis, griseo-irroratis; posticis hyalinis.

Long. corp. 5 lin.; exp. alar. 13—15 lin.

Antennæ black, annulated with white, the apical third entirely white; palpi black, with long grey hairs; head and thorax testaceous, abdomen paler; legs pale ochreous; anterior wings hoary,

irrorated with grey, especially towards the apex; posterior wings hyaline.

Habitat, Australia. In the British Museum.

Closely allied to the preceding; differs in its slightly larger size, more hoary anterior wings, and in the posterior wings wanting the cupreous iridescence.

These two species, with *L. magnus*, Walker, and *L. oppositus*, Walker, from Tasmania, form a group apparently peculiar to Australia and New Zealand.

L. exiguus.

Antennis albidis; basim versus subtiliter nigro-annulatis; oculis fuscis; capite thoraceque ferrugineis; abdomine saturatiore; pedibus pallide albido-ochraceis; alis anticis vix pellucidis, pallide fulvo-pilosis, venis ochraceis, posticis pallidioribus.

Long. corp. 3 lin.; exp. alar. $7\frac{1}{2}$ lin.

Antennæ whitish, with an ochreous tinge, in the basal third finely and distantly annulated with black; eyes brownish-black; head and thorax ferruginous; abdomen darker; legs pale whitish-ochreous; anterior wings somewhat transparent, not very thickly clothed with tawny hairs, veins ochreous; posterior wings more transparent, beautifully iridescent, reflecting various colours.

Habitat, Australia (Moreton Bay.)

Genus Macronema, Pictet.

M. hospita.

Antennis fuscis; articulo basali ochraceo; capite nigro, nitido, maculis duabus inter oculos rufo-ochraceis; thorace nitido, nigro, collare rufo-ochraceo; abdomine griseo-brunneo; pedibus pallide fulvis; alis anticis fuligineo-fuscis, strigâ basali furcatâ, maculis tribus magnis costalibus, una ad apicem, altera ad angulum analem, tertia marginem dorsalem versus albo-hyalinis; posticis hyalinis, iridescentibus, apicibus fuscis.

Long. corp. 5 lin.; exp. alar. 15 lin.

Antennæ brown, blackish towards the apex and base, basal joint reddish-ochreous; head shining black, with two reddish-ochreous raised spots between the eyes; thorax shining black, collar and shoulders reddish-ochreous; abdomen greyish-brown; legs pale fulvous; anterior wings smoky-fuscous, with whitish hyaline markings, viz., a furcate streak from the base, three large spots

on the costa, the last of which reaches nearly across the wing and expands at the end, one in the apex, one at the anal angle, and one towards the inner margin, with a prolongation towards the base; posterior wings hyaline, iridescent, apex dark fuscous.

Habitat, Shanghae, North China. Collected by Mr. Fortune. In the British Museum.

M. lauta.

Antennis bases versus crassis, breve nigro-pilosis, aliter ochraceis; palpis ochraceis articulo quarto nigricante; capite thoraceque nitidis purpureo-fuscis; pedibus testaceis, tibiis tarsisque externe fuscis; alis anticis saturate purpureo-fuscis, nitidis, strigâ basali, strigis costalibus tribus, maculisque duabus marginem dorsalem versus, albo-hyalinis; posticis albo-hyalinis, apicibus late fuscis.

Long. corp. 5 lin.; exp. alar. 15 lin.

Antennæ, for the space of half an inch from the base, thickened, and clothed with short black hairs, the rest ochreous; palpi bright ochreous, the fourth joint tinged with fuscous; head and thorax shining, purplish fuscous; legs testaceous, tibiæ and tarsi externally fuscous, spurs fuscous; anterior wings shining dark purplish fuscous, with whitish hyaline markings, viz., a short streak from the base, three streaks placed close together from the costa, of which the middle is the longest, the outer ones slightly convergent, and two large spots, scarcely touching the inner margin, placed opposite to the two outside costal streaks; posterior wings whitish hyaline, the tips broadly fuscous.

Habitat, Hong Kong. Collected by J. C. Bowring, Esq. Three specimens in the British Museum.

The thickened antennæ noticed in this species are observable in a slight degree in several others, but not to the same extent.

M. Australis.

Monopseudopsis inscriptus, Walker, British Museum Catalogue of *Neuroptera*, pt. 1, p. 105.

The single type of this insect, on which Mr. Walker founded his genus *Monopseudopsis*, is in very bad condition, and is evidently a *Macronema* of the same group as *M. hospita*, *M. zebratum*, Hag., *M. sepultum*, Hag., *M. lauta* and *M.* (*Hydropsyche*) *multifaria*, Walker, and is closely allied to the two first. All these, in common with the insect now under consideration, are distinguished by the presence of whitish hyaline markings on a dark

ground. I believe Mr. Walker is now of opinion that his genus had better be sunk and the species merged into *Macronema*, and, as a *M. inscripta* is already described from Sierra Leone, I have changed the name to the above. The species inhabits Australia.

Family HYDROPSYCHIDÆ.

Genus Hydropsyche, Pictet.

H. fimbriata.

Mas et Fœm.—Antennis pallide ochraceis, brunneo-annulatis; capite thoraceque rufo-brunneis; abdomine supra nigricante; pedibus ochraceis; alis anticis fulvo-ochraceis, apicem versus saturatioribus, maculis numerosis pallidioribus, maculis elongatis ad marginem dorsalem saturate fulvis et albido-hyalinis alternatis, marginibus apicalibus distincte albido-fimbriatis; posticis flavido-pilosis.

Appendicibus analibus inferioribus maris articulis ultimis longissimis, acutis, sursum incurvatis, approximatis; pene pallido, ante apicem infra calloso, apice tumido rufo-brunneo.

Long. corp. 4 lin.; exp. alar. $10\frac{1}{2}$ lin.

Male and Female.—Antennæ pale ochreous, annulated with dark brown; eyes varied with brown and black; head and thorax reddish brown; abdomen blackish above; legs ochreous; anterior wings tawny ochreous, much darker towards the apex, with numerous small pale spots; several of these are larger towards the base, on the inner margin elongate pale spots alternate with the dark ground-colour, fringe of the apical margin conspicuously yellowish white; posterior wings clothed with clay-coloured hairs.

Inferior anal appendages in the male with very long terminal joints, which are pointed and curved upwards, approximating at the tips; penis pale, with a callosity before the apex beneath, apex dark red, tumid.

Habitat, New Zealand. In the British Museum.

The following new species inhabits Britain :—

Family RHYACOPHILIDÆ.

Genus Rhyacophila, Pictet.

R. munda.

Mas.—Antennis brunneis flavo-annulatis; palpis brunneis; oculis nigris, ocellis distincte flavido-albis; capite pallide

fusco sparse aureo-piloso ; thorace abdomineque supra piceo-brunneis, his segmento ultimo appendicibusque testaceis; pedibus pallide ochraceis, tibiis tarsisque anterioribus et intermediis nigro-annulatis ; alis anticis ad apicem vix rotundatis, aureo-brunneis cinereo-irroratis, fasciâ apicem versus cinereâ, basim versus maculis duabus argenteis, venis cubitalibus nigris ; posticis griseo-flavis, pterostigmate pallide brunneo.

Appendicis analis segmento ultimo lobi brevis abrupti lati formâ suprà educto ; appendicibus inferioribus longissimis, ad apicem profunde bifidis.

Long. corp. 4 lin. ; exp. alar. 11 lin.

Male.—Antennæ brown, annulated with yellow; palpi brownish; eyes black, ocelli conspicuously yellowish white ; head pale fuscous, sparingly clothed with golden hairs; thorax pitchy brown, clothed with golden hairs in the middle; abdomen above dark pitchy brown, last segment and appendages testaceous ; legs pale ochreous, anterior and intermediate tibiæ and tarsi annulated with black: anterior wings somewhat rounded at the apex, golden-brown, with scattered ashy-grey spots, a curved ashy-grey fascia arises at the anal angle and reaches two-thirds across the wing; from the costa, near the apex, springs a short band, which sometimes unites with the fascia, forming a somewhat interrupted band across the wing, towards the base are two silvery spots, with a black spot between them ; veins of the cubitus conspicuously blackish, a row of faint fuscous spots round the apical margin, ciliæ golden-yellow ; posterior wings greyish-yellow, pterostigma and the extremity of the apical veins brownish.

Upper margin of the last abdominal segment produced in the middle into a short broad lobe, with a depression in the centre, the margin cut off very abruptly; appendices superiores almost concealed under the lobe, small, dilated at the apex, which is emarginate; appendices inferiores very long, basal joint very broad, the margins turned inwards; terminal joint deeply but unequally cleft at the apex, the forks not divaricating; penis sheaths curved upwards and approximating.

Of this pretty species I captured eight specimens (all males) at Shaugh Bridge, near Bickleigh, Devon, on the 16th Sept. 1861.

Wishing to be sure, before venturing to describe it, that it was not already known on the Continent, I sent specimens to Dr. Hagen, and he considers it to be altogether new. In the furcate inferior appendages it partially agrees with *R. venusta*, Pict. MS.,

and *R. aurata*, Brauer. In the first the points of the fork are parallel and very distant, in the latter very unequal and divergent. In the form of the prolongation from the last abdominal segment, and in its general characters, it differs very much from any recorded species, and forms a transition between the group of *R. aurata* and two at present undescribed species noticed in Stett. Entomol. Zeitung, 1859, p. 154.

XXIII. *Description of a New Genus and Species of* Noctuites. By Francis Walker, Esq., F.L.S.

[Read 3rd March, 1862.]

The Lepidopterous insect here described appears to be unique; it was discovered upon a fence at Halifax, in Nova Scotia, by B. Piffard, Esq., and was presented by him to the British Museum.

Fam. GLOTTULIDÆ, Guen.

Genus Phornacisa, n. g.

Fœm.—Corpus pilosum, crassum. Proboscis robusta. Palpi spissi, pilosi, oblique ascendentes, frontem non superantes; articulus 3us conicus, minimus. Antennæ glabræ, sat robustæ. Abdomen longiconicum, alas posticas sat superans. Pedes robusti, pilosi; tarsi spinosi. Alæ sat angustæ; anticæ apice rotundatæ, costa recta, margine exteriore sub-convexo sub-obliquo.

Female.—Body pilose, very stout. Proboscis robust, moderately long. Palpi thick, pilose, obliquely ascending, not rising so high as the front; 3rd joint conical, very short. Antennæ smooth, rather stout. Abdomen thick, elongate-conical, extending some distance beyond the hind-wings. Legs robust, pilose; hind-tibiæ with four moderately-long spurs; tarsi spinose. Wings rather narrow. Fore-wings rounded at the tips; costa straight; exterior border slightly convex and oblique; interior angle much rounded; underside with a thin fringe of long hairs in the discal areolet; 2nd inferior vein as far from the 1st as from the 3rd; 3rd about thrice further from the 4th than from the 2nd.

Phornacisa Piffardi, White, MSS.

Fœm.—Cinereo-nigra, alis anticis canis nigro-conspersis, linea basali tenui strigulam emittente fasciaque lata media nigris, striga costali lata diffusa nigricante, alis posticis albis nigro latissime marginatis.

Female.—Cinereous black. Fore-wings above hoary, black-speckled; a black, slender, slightly-curved, transverse black line near the base, abbreviated hindward, emitting a short, slender black streak; a broad, deep-black middle band, which is slightly dilated towards the costa and towards the interior border; a broad, diffuse, blackish streak extending from the costa to the disk. Hind-wings white, with a very broad black border; underside with a black discal point.

Length of the body 8 lines; of the wings 16 lines.

Halifax, Nova Scotia.

XXIV. *On the Asiatic Silk-producing Moths.* By F. Moore, Esq.

[Read 7th April, 1862.]

In the following list are enumerated the whole of the species of these, the most useful of insects, that are at present known to me, for the knowledge of many of which I am indebted to the researches now being carried on by our valuable Corresponding Member, Captain T. Hutton, of Mussooree.

Bombyx mori, Linn.

The common silkworm. Inhabits China, Cashmere and Bengal.

Cultivated in China, Cashmere, Persia, Herat, Affghanistan, Bengal, France and Italy; in all which countries it is an annual only. It produces the largest cocoon and the best silk—silk pale-yellow. Caterpillar feeds on the *Toot* or mulberry.

Bombyx Sinensis, Hutton.

Inhabits China.

Called the small Chinese, or *monthly worm*, in Bengal, where it is partially cultivated, but from whence it is said to be fast disappearing.

It is noted by Captain Hutton, that the *monthly worms* were not known in India earlier than between thirty and forty years ago, or at least that they were not there cultivated; and previous to that time, an *annual* worm, and it only, was the species under cultivation both in India and Europe. Caterpillar feeds on the mulberry.

Bombyx cræsi, Hutton.

The *Madrassee* or *Nistry* of the Bengalese. Inhabits China.

Cultivated in Bengal, where it produces *nine monthly* crops of beautiful golden-yellow silk.

It is stated that the *Madrassee* was introduced into Bengal about the year 1780, the cocoons of which were at first good, but are now fast degenerating. Caterpillar feeds on the mulberry.

Bombyx fortunatus, Hutton.

Inhabits China.

Cultivated in Bengal, where it is known as the *Dasee* or *Dessee* (*i. e.*, country worm). It yields a golden-yellow silk, and produces five crops in the year. It is much smaller than the *Madrassee*,

and while the one prefers the warmth of summer, the other prefers that of the winter months. Feeds on the mulberry.

Bombyx Arracanensis, Hutton.

Cultivated in Arracan, but is said to have been introduced from China. Yields annually *several* crops of silk superior to that produced in Bengal. Larva feeds on the mulberry.

Bombyx textor, Hutton.

Inhabits China.

Cultivated in Italy and France, and produces, when healthy, a pure white silk. It is also cultivated in Bengal, where it does not thrive, and is there called the *Boro poloo*. Captain Hutton states that there is no apparent difference in the larva of this and *B. mori*, except in size—this being nearly an inch less—but the form and texture of the cocoon are totally different. Strange to say, although it is only an annual in France, Italy, Bengal and China—with him at Mussooree, it invariably yields a second or autumnal crop, which *B. mori* never does. Feeds on the mulberry.

Bombyx religiosæ, Helfer.

Inhabits Assam, and known as the *Joree*.

Found wild, feeding on the *Peepul* tree (*Ficus religiosa*). It is stated to yield a silk, if not superior, yet equal, to that of *Bombyx mori*. The cocoon shows the finest filament, and has very much lustre. It is exceedingly smooth to the touch, and very different from the cocoon of *B. mori*.

Bombyx Huttoni, Westwood.

This is a wild mountain species, occurring abundantly on the indigenous mulberry trees of the Western Himalaya, from the Ganges to the Sutlej, and probably beyond them. The worm is so intractable that it can only be fed *upon* the trees in the open air, and experiments made by Captain Hutton at Mussooree have elicited the fact, that apparently little is to be expected from its cultivation, as all attempts to domesticate it have hitherto proved ineffectual.

A batch of the eggs of this species, which Captain Hutton has recently sent me, are now hatching, but unfortunately my mulberry trees (*Morus alba*) are not in leaf.

The larva of this species has long fleshy spines in pairs on every segment. The cocoon is spun in the leaf, which is drawn round it, and the silk is very fine and of a pale yellow tint.

Bombyx Bengalensis, Hutton.

A wild species discovered by A. Grote, Esq., feeding upon the *Artocarpus Lacoocha* in the neighbourhood of Calcutta, where it is scarce. The larva spined, like that of *B. Huttoni*.

Bombyx Horsfieldi, Moore, Catal. Lep. Mus. India House, ii. p. 380, plate 11a, fig. 5 (1858).

Inhabits Java, where discovered by the late Dr. Horsfield.

Bombyx subnotata, Walker, Proc. Linn. Soc. (Zool.) iii. p. 188 (1859).

Described as from Singapore, where it was collected by Mr. A. R. Wallace.

Remark.—The last five species, namely, *B. religiosæ*, *Huttoni*, *Bengalensis*, *Horsfieldi* and *subnotata*, might, with propriety, be separated from the genus *Bombyx* under the name *Theophila*, nobis,—there being well-defined differential characters both in the larva and imago.

Ocinara dilectula, Walker, Catal. Lep. B. M. pt. vii. p. 1768 (1856).

Inhabits Java.

The larva and cocoon of this are figured on plate xviii., fig. 6, 6a, of the Catal. Lep. Mus. Ind. House. Feeds on a species of *Ficus*.

Remark.—Captain Hutton, in a letter just received, states that he has lately discovered three other species of this genus.

Attacus Atlas, Linn., Cramer, Pap. Exot. iv. pl. 381, f. C. 382, f. A.

Inhabits China, Burmah, India, Ceylon and Java, specimens from all which countries are identical, except in depth of colouring and in the talcose spots of the fore-wing varying in size, and in the presence or not of the small upper spot. In the hind-wing the marginal chain-like markings in some specimens are black, in others ferruginous, this occurring in specimens from the same localities.

The larva feeds on *Falconeria insignis* and *Bradleia ovata*, and spins the cocoon within the leaf, and, when mature, is of a pale sea-green, thickly covered over with a white powder, which is evidently secreted from the long fleshy tubercles which arise in rows down the length of the body. It is easily reared in a state of domestication, producing a cocoon well stored with a fine, yet strong, silk of a greyish colour.

The Tusseh cloth of China is said to be produced from this.

Ceylon specimens have been named by some authors *Att. Arethusa;* but this name has been applied to a Brazilian species of *Attacus*.

Attacus Edwardsii, White, Proc. Zool. Soc. 1859, pl. 57.

Inhabits Sikkim, and differs from *Att. Atlas* in being much darker, the disc of both wings being black, the transverse bands much broader and white, and in having the ocelli inwardly bordered with yellowish ferruginous. It also has an additional black spot below the apex of the fore-wing.

Attacus Cynthia, Drury, Exot. Ins. ii. pl. 6, f. 2 (1773); Cramer, Pap. Exot. i. pl. 39; f. A.

Att. Canningi, Hutton (1860).

Inhabits China (where it feeds, according to M. Guérin-Méneville, on *Ailanthus glandulosa*), also the Sub-Himalayas. Specimens from Hong Kong, Java,* Nepal, Darjeeling and Kemaon are alike, but differ in size; those from Hong Kong exceeding 6 inches, the Nepalese 5, the Mussooree not over $4\frac{1}{2}$, while those from Java vary from $3\frac{1}{2}$ to 6 inches. It is very common in a wild state at Mussooree, where, states Capt. Hutton *in epistola*, "it feeds on *Coriaria Nipalensis* and on the Tex Bul (*Xanthophyllum hostile*). It will likewise eat the leaves of *Ricinus communis*, but does not take kindly to them. It can also be reared on the Cape woodbine. It is only an annual." This has been cultivated for centuries in China, where its silk clothes masses of the people. It is also extensively reared in Assam. The Eria has been introduced into Malta, Piedmont, Tripoli, France and Grenada, and I believe also into Algeria. It is, together with a hybrid† between it and the Bengal Eria, successfully cultivated in the open air in many parts of France (where it was introduced by M. Guérin-Méneville in 1859), and is there reared on the *Ailanthus*, its silk being turned to profitable account.

This hybrid, eggs of which M. Guérin-Méneville kindly forwarded me, was, by myself, reared in London on the *Ricinus communis*.

Attacus Ricini (Sir W. Jones), fide Roxburgh, Trans. Linn. Soc. Lond. viii. p. 42 (1804); Boisd. Ann. Soc. Ent. France, 1854, p. 755.

Saturnia Arrundi, M. Edwards, Bull. d'Agri. de France, 1854, tab. 10, p. 13.

Attacus lunula, Walker, List Lep. Het. B. M. p. 1221 (1855).

* The "Eria" of Java has been named *Attacus insularis* by Vollen Hoven.

† This hybrid has been named in France *Sat. Vesta*, but by whom I am unaware. Specimens received from the late M. Becker were so named.

Inhabits Assam, Bengal, and is mentioned by Tennent as occurring in Ceylon.

This is the commonly cultivated Eria, and in Bengal yields four or five crops annually.

Attacus Guerinii, Moore, Proc. Zool. Soc. 1859, pl. 65, f. 3.

Similar to the Eria, but the smallest of the group. Believed to be from Bengal, and may be distinguished by the absence of the talcose lunule on the fore-wing.

Actias Selene (Macleay), Leach's Zool. Misc. 1815, pl. 70 (Cramer, i. pl. 31, f. A.). *Syn. Plectropteron Diana*, Hutton, Trans. Ent. Soc. Lond. V. 45 (1847).

Inhabits Silhet, Darjeeling, and, states Capt. Hutton, is common at Mussooree, where the larva feeds upon *Andromeda ovalifolia*, *Carpinus bimana*, *Coriaria Nipalensis*, *Cedrela paniculata*, *Glochidion ovatum*, the wild cherry and the walnut, and can be easily domesticated. It is mentioned by Tennent as occurring in Ceylon. Occurs also in Pondicherry, where M. Perrottet states the larva feeds on the *Odina wodier*, and where attempts to rear this species in a domestic state have proved that it yields four crops of excellent silk annually.

Actias Mænas, Doubleday, Ann. Nat. Hist. 1847, p. 95; Westw. Orient. Entom. pl. 22.

Inhabits Silhet.

Actias Sinensis, Walker, List Lep. Het. B. M. p. 1264 (1855).

Inhabits N. China.

Actias Leto, Doubleday, Proc. Ent. Soc. Lond. v. p. li. (1849).

Inhabits Silhet, Darjeeling.

Antheræa Assama (Helfer), Journ. Asiat. Soc. Bengal, 1837, p. 43; Westw. Cabinet Orient. Ent. pl. 20.

Mooga or *Moonga* of the Assamese.

Inhabits Assam, Silhet, Ceylon,* and also occurs at Mussooree, —a specimen having been taken, Capt. Hutton informs me, in that locality.

According to Dr. Hugon, the Moonga is extensively cultivated in Assam, and the silk forms one of its principal exports. It can be reared in-doors, but thrives best in the open air upon the trees. The larva feeds on the Champa (*Michelia sp.*), Soon, Kontooloa,

* Fide Walker, in Tennent's "Ceylon."

Diglutee (*Tetranthera diglottica*), Pattee Shoonda (*Laurus obtusifolia*), and the Sonhalloo (*Tetranthera macrophylla*). There are generally five broods in the year.

Antheræa Mezankooria, Moore.

Of this we only know the silk. It comes from Assam, the worm producing it being called by the natives "Mezankorie," or "Mezankooree," and feeds on the leaves of the Addakoory, a species of *Tetranthera*. The silk is yellowish white, and constitutes the dress of the higher ranks in Assam.

Antheræa Paphia (Linn. 1767). Cramer, Pap. Exot. ii. pl. 146, f. A.—147, f. A.—148, f. A.; Sykes, Trans. Linn. Soc. iii. plate; Blanchard, Voyage dans l'Inde, Ins. pl. 3; Guér. Ménev. Rev. et Mag. de Zool. 1855, pl. 6, f. 2.

Phal. Att. Mylitta, Drury, Exot. Ins. ii. pl. 5, f. 1 (1773).

"Tusseh" or "Tussur" of the Bengalese.

Inhabits Assam, Silhet, Upper and Lower India, Ceylon.

Tusseh silk is a most abundant product, and is everywhere used as clothing by the natives, and even by Europeans, while considerable quantities are imported into England. It is the most common in use of the wild silk-worms. Millions of cocoons are annually collected in the jungles and brought to the silk factories near Calcutta, but the principal place of their manufacture is at Bhagulpore.

The larva at Bhagulpore feeds on the Baer (*Zizyphus jujuba*) and the Semul (*Bombax heptaphyllum*), and is there an annual only.

At Mussooree Capt. Hutton reared it on *Quercus incana*, and informs us that "the Bengal Tusseh is stated to have three broods in the year, whereas the Pondicherry variety is also stated to have four broods in the year, and that of Behar, Burbhoom hills, Bhagulpore, and of the Punjaub on the contrary only one brood." The variations in the size of the cocoons and in the coloration of the moths are very puzzling. These remarks will suffice to show the state of our knowledge, or rather our ignorance, respecting these insects.

Antheræa Surakarta, Moore.

Inhabits Java.

A close ally of the common "Tussur."

Antheræa Pernyi, Guér.-Méneville, Rev. et Mag. de Zool. 1855, pl. 6, f. 1.

Inhabits Mantchouria, N. China, the larva feeding on a species

of oak. (The leaf figured, with its attached cocoon, by Guér.-Méneville, is that of *Castanea Japonica*.)

May be distinguished by the band on the hind-wing being contiguous to the ocellus.

The cocoon is somewhat like that of the Tussur, but differs in having an exterior coating of loose silk.

Antheræa Yamamai, Guér.-Ménev., Rev. et Mag. de Zool. 1861, pl. 11, 12 and 13.

Inhabits Yamamai, in Japan.

The cocoon and silk are pale yellowish-green. Samples are shown among the raw products in the Japan Court of the International Exhibition.

Antheræa Roylei, Moore, Proc. Zool. Soc. Lond. 1859, pl. 64, f. 1.

This is a common species both at Simla, Mussooree and Almorah.

Capt. Hutton informs me that the larva feeds upon the hill oak (*Quercus incana*). He has lately had it under cultivation and the silk is pronounced to be promising and worth cultivating. They can be reared easily in the house.

Capt. Hutton effected a cross between this and *Anth. Paphia*, by placing the females of the latter out upon a bush at night. In the morning a male *A. Roylei* was found coupled with them. In this way were obtained three batches of eggs, but out of about 600 eggs only fifty hatched. The worms went on very well until the first moult and then all died but two, they were unable to cast their skins. "It is remarkable, however," he continues, "that a female *A. Roylei* in my study window was *ravished* by a male *A. Paphia*, which came at night out of a cocoon suspended there also. I say ravished, because during the whole day the female made violent efforts to disengage herself, but in vain; she appeared to be in pain from the operation. In the evening they separated and the female, instead of depositing her ova, *died* (*from a surfeit of love*, I imagine). I took the eggs from her body, but none hatched."

Capt. Boys mentions this as also occurring in Kemaon.

Antheræa Perrottetii (Guér.-Méneville), Mag. de Zool. 1843, pl. 123.

Inhabits Pondicherry, and is probably the variety of the Tussur mentioned above, as having four broods in the year.

Antheræa Frithi, Moore, Proc. Zool. Soc. Lond. 1859, pl. 65, f. 1.

Inhabits the neighbourhood of Darjeeling.

Capt. Hutton writes me that the cocoon of this is identical with that of *Anth. Paphia* as to form, but the silk is finer. At present it is only known as a wild species, and neglected because supposed to be the Tusseh. Many others there doubtless are which are thrown aside for the same reason, whereas they might be rendered available to commerce.

Antheræa Jana (Cramer), Pap. Exot. iv. pl. 396, f. A. (1782).

Inhabits Java.

No example of this is known in collections. Its distinguishing characters are its small size ($4\frac{3}{8}$ inches), the opaque ocelli, and the hind-wing having, besides the usual submarginal line, two additional undulated wider lines proceeding from the abdominal margin, the first extending round the ocellus, and the other only to the ocellus.

Antheræa Helferi, Moore, Proc. Zool. Soc. 1859, pl. 64, f. 2.

Inhabits Darjeeling or its neighbourhood.

Antheræa Larissa (Westwood), Cabinet Orient. Ent. pl. 24, f. 1 (1847).

Inhabits Java.

Male in collection of M. Dalen, at Rotterdam, female in that of the late Dr. Horsfield,—now at the British Museum.

Remark.—Most of, if not all, the species of this genus are furnished with a spine or "wing-spur" (discovered by Capt. Hutton), with which, he states, the moth *cuts* its way through the hard cocoon.

Saturnia Pyretorum (Boisd.), Westw. Cab. Orient. Ent. pl. 24, f. 2, ♀ (1847).

Inhabits China.

Saturnia Grotei (Moore), Proc. Zool. Soc. 1859, pl. 65, f. 2.

Inhabits Darjeeling.

Rinaca Zuleika (Hope), Trans. Linn. Soc. Lond. xix. p. 132, pl. 11, f. 5 (1842); Walker, Catal. Lep. Het. Brit. Mus. vi. p. 1275 (1855).

Inhabits Silhet.

Loepa Katinka (Westw.) Cabinet Orient. Ent. pl. 2 (1847).

Loepa Katinka, Moore, Catal. Lep. Mus. Ind. House, ii. p. 399; *id.* Proc. Zool. Soc. 1859, p. 260.

Inhabits Mussooree, Assam, Silhet, Java.

In Java the caterpillar feeds on the Galing (*Cissus sp*—?) and the Girang (*Leea sp*—?), and, according to Dr. Horsfield, is abundant during December, January and February.

Genus nov. Neoris, Moore.

Approaches *Loepa* in form, but differs in the shape of the ocelli—that on the fore-wing being the smallest and angular, and the one on the hind-wing large. Antennæ of the male strongly bipectinated, and *feathered to the very apex* of the shaft; these in the male of *Antheræa Paphia*, *A. Roylei* and others *have the end of the shaft naked.*

Of this form I have only examined an imperfect specimen which was sent to this country by Captain Hutton, who states that the larva resembles that of *Anth. Paphia*, being naked and possessing tubercles, spinning an open gauze-like cocoon. The larva appearing in April at Mussooree at an elevation of 6,500 feet, feeding on a species of wild pear tree.

Neoris Huttoni, Moore, sp. nov.

Wings fulvous-red. *Fore-wing* with a broad discal band, finely irrorated with black scales, its exterior margin having a double zigzag line of black scales, and an exterior but adjoining line of pale buff-white lunules. Ocellus with a double inner and single outer line, the interior having a central black and white geminated angular line. An indistinct suffused ferruginous shade passes across the disc through the ocellus. Costal margin finely irrorated. Hind-wing with a dark, single, sub-basal line, and a double exterior or sub-marginal lunulated line, this being bordered with an outer whitish line; the ocellus large, with three outer rings, the middle one white, the others black; within the ocellus is a yellow line and a patch of white, divided by an indistinct line, the outer part being ferruginous. A white band across the anterior portion of the thorax and in a line with a whitish triangular spot near the base of the upper wing; remainder of the thorax pale ferruginous: the body uniform in colour with the hind-wing. Antennæ of male $\frac{3}{4}$ of an inch in length, strongly bipectinated, and feathered to the very apex of the shaft. Expanse of fore-wings 2 inches.

Habitat Mussooree, N. W. India.

Genus nov. Caligula, Moore.

Wings ample; apex of the fore-wing in the male falcate, in the female rounded. Antennæ of the male densely bipectinated and feathered to the apex. Larva thickly covered with long hairs. Cocoon an open gauze-like case.

Caligula Thibeta.

Saturnia Thibeta (Westw.), Proc. Zool. Soc. 1853, p. 166.

Habitat Mussooree, Thibet ?

Larva green and densely enveloped in long greenish-white hairs, which look like a light silken web around it. Cocoon a light open gauze or net-like case. Occurs at Mussooree, where the larva feeds on *Andromeda ovalifolia*, and the common cultivated quince.

Caligula Simla.

Saturnia Simla, Westw. Cabinet Orient. Ent. p. 41, pl. 20, f. 1 (1847).

Habitat Simla, Darjeeling ?

Captain Hutton informs me that this occurs on the Simla side of the mountains, but that he has never met with it at Mussooree. Larva densely covered with long hair. Cocoon an open gauze case.

Caligula Japonica, Moore.

Habitat Japan, province of Kourinoki.

Caterpillar forms a dark-coloured, open, net-like cocoon.

Numerous samples of this species are shown among the raw products in the Japanese Court in the International Exhibition.

Salassa Lola (Westw.), Cab. Orient. Ent. pl. 12, f. 3 (1847).

Salassa Lola, Moore, Proc. Zool. Soc. 1859, p. 246.

Inhabits Silhet.

Cricula trifenestrata (Helfer), Journ. Asiat. Soc. Beng. 1837, p. 45; (Herr.-Schäffer), Lep. Exot. Spec. Nov. 1, pl. 17, f. 80, ♀.

Saturnia Zuleika, Westw. Cab. Orient. Ent. pl. 11, f. 1 (1847),

Inhabits Assam, Moulmein, Java.

Found in Assam feeding on the Soon tree, and in Moulmein upon the cashew-nut tree (*Anacardium orientale*).

This is the Haumpottonee of the Assamese, noted by Mr. Hugon as being very common in Assam. He states that the silk can be spun like the Eria cocoon, but the natives do not use it on account of its silk causing a severe itching when weaving.

In Java the larva feeds on *Protium Javanum*, *Canarium commune*, and *Mangifera ingas*. Abundant during December and January, scarce in March.

The cocoon is of a beautiful yellow colour, of a rich lustre, and constructed like net-work, the enclosed chrysalis being visible.

XXV. *On the Restoration of Obsolete Names in Entomology.*

By Dr. H. Schaum.

[Read 7th April, 1862.]

On recently publishing a second edition of the "Catalogus Coleopterorum Europæ" (Berlin, 1862), the opportunity first presented itself of obtaining from Mr. Waterhouse's Catalogue of British Coleoptera (London, 1858—60) positive information respecting a great many species established by English Entomologists, and especially by the late Mr. Stephens, which no continental author had ever been able to identify. The advantages which I derived in some genera from the study of this Catalogue will be obvious to every one, and require no further comment. As, however, I have not in the majority of cases adopted the older names of Stephens and Marsham restored by Mr. Waterhouse, notwithstanding the care which the latter has bestowed on the exact determination of the British species, and notwithstanding the apparent correctness of the synonymy given by him, I feel it incumbent upon me to explain to the English Entomologists my reasons for not having done so.

It is universally acknowledged that a species must have been described in order that priority can be claimed for its name; and no one thinks of assigning priority to a mere catalogue name, because we are unable thereby to recognize the species to which it has been given. This reason, however, compels us to put the query, *when* can it be said that a species has been described?

Even the most fanatical advocate of the law of priority will not pretend that a species has been described, concerning which utterly false notices, or erroneous or unimportant indications, are given, which so completely fail in characterising the species that no one is able to recognise it. Otherwise it would be possible to ensure the adoption of names by the publication of diagnoses absolutely *au hasard*, and which have no bearing whatever on the insects. I consider it impossible for any reasonable man to consent to this, and to assert, for instance, that the *Hister australis*, Boisd. (Faun. de l'Océan.) is a described species of the genus *Saprinus*, because it is said to be "nigro-cyaneus, nitidus, subtus ater," or that *Coccinella virescens*, Hope (Zool. Misc.) is a described species of the group of *Chrysomelidæ*, because Hope has

added to the name the words "supra viridi-brunnea, subtus rubro-testacea."

Unfortunately notices so utterly valueless abound in various papers and periodicals, greatly to the detriment of science; nor will they cease to make their appearance until it is laid down as a principle, by all scientific men, that, for the benefit of science, such notices have no claim whatsoever to priority.

The essential condition to a species being described is this,—that (if not all the principal) at least *some* of its distinctive characters are pointed out, so that *some possibility* exists of its recognition by another Entomologist. If this condition is not fulfilled the species is *not* "described," however long and tedious may be the author's allusion to insignificant and unnecessary details. And "descriptions" (so called) of great length do often come under this category,—as Mr. Wollaston will fully acknowledge with regard to M. Brullé's compositions on Canarian *Coleoptera*.

I doubt whether this principle will be objected to by any one *in theory;* a few may, however, urge that the decision as to whether an insect is described or not will be attended with much difficulty *in practice*, and they will consider it more convenient to compare not the descriptions themselves but the dates of their appearance. But what would they say if a physician should for his greater convenience treat all his patients after one general prescription, without inquiring into the details of the case and acting according to the individual constitution? Are human beings, endowed with judgment and reason, to set the latter aside by proceeding thus mechanically, or, on the other hand, are they to employ them? At all events these opponents are bound to state where *they* will trace the limit as to whether a species is described or not, since they will certainly not consider *Hister australis*, Boisd. and *Coccinella virescens*, Hope, to be in any way "described."

Starting from this principle,—*that the words of an author must render the genus or species recognisable*, if either the one or the other is to be considered described, I cannot adopt Mr. Waterhouse's practice of restoring names given by Stephens and Marsham, which had no currency, even in England (because they could not be ascertained from their books), when by thus doing he reinstates such names *to species which were universally known and clearly described under other names of a posterior date.* In the majority of these cases Mr. Waterhouse did not ascertain those older names by the study of the books, but merely by the investi-

gation of real or supposed typical specimens, and concerning which I will hereafter say a few words. By comparing the original collection the names of a *mere catalogue* may, however, be equally well ascertained; I cannot, therefore, accept such a change on the mere ground of a typical specimen being compared.

It must be expressly stated, in this place, that I do not advocate, or even accept, the change of a name, *because* the description of its author is insufficient, if there can be no doubt as to the right application of that name. This is not the question. A great many of the generic and specific names of Stephens are universally adopted irrespective of the merits of their descriptions, when there was no doubt as to their right application. The question is solely this—whether a universally known and generally adopted name shall be *changed* because an older one exists, WHEN *that older one is unaccompanied by a sufficient description* (or rather by no "description" at all)? I think *not;* and I doubt whether such names are likely ever to be adopted by continental Entomologists, especially as they must always remain somewhat doubtful to all who know by experience that even the most accurate observers may occasionally err in the determination of a typical specimen.

In order to change a universally adopted name into an older one it appears to me to be necessary, that it must be proved in each individual case, that the description of the author of the latter applies in reality to the species of which the name is to be changed and *to it only*. Until this is done, I cannot assign to the older name any greater claim to priority than to a catalogue name. And that this can be done in but a very few of those cases in which Mr. Waterhouse has restored an older name of Stephens or Marsham may be proved by many examples; I will, however, content myself with illustrating it by two,—one bearing on a genus, the other on a species.

Mr. Waterhouse changes the name of the genus *Chilopora*, Kraatz, (group of *Aleocharæ*), which Kraatz had established on *Calodera longitarsis* and *rubicunda*, Eric., and had well defined, into that of *Ischnopoda*, Steph. On referring to Stephens's work I find *Ischnopoda* characterized in these words: "Head nearly sessile, thorax longer than broad, elytra wide, body slender, abdomen acute at tip, legs slender, tarsi, especially the hinder, long, all five-jointed." According to my opinion it is an insult to science to establish a genus of *Aleocharæ* by such a diagnosis,—which is so vague that it will apply to almost any Staphylinide, and which does not afford the slightest character by which the genus may be distinguished. Nevertheless Kraatz might have adopted

the name, and probably would have done so if it could have been said that the genus *Ischnopoda* in reality corresponds with *Chilopora;* but in Stephens's work it is composed of seven species, the first and last of which (specifically identical) alone belong to *Chilopora;* the second and third are *Tachyusæ*, the sixth is a *Homalota*, and the fourth and fifth appear to be no longer extant, as no mention whatever is made of them in Mr. Waterhouse's Catalogue (but they were certainly not *Chiloporæ*). Can it, under these circumstances, be said that the genus *Ischnopoda*, which is not characterized at all, and which is an assemblage of species belonging to at least three different genera, is identical with *Chilopora*, merely because the first species happens to belong to it?

And are there any better grounds for changing the name of *Atomaria nana*, Eric., into that of *A. nigriventris*, Steph., because two labelled specimens of *nigriventris* belong to *nana*, when it can be shown that Stephens has not pointed out any character of *nana*, but confounded in his collection, under the name of *nigriventris*, specimens of *A. nana*, *A. linearis* and *A. elongatula*, and moreover mixed other specimens of *nana* with *umbrina* under the name of *nigrirostris*, and with *linearis* under the name of *linearis?*

I will not conclude without moreover proving that no great faith can be placed, even in the so-called "typical specimens" of the Stephensian or any other collection, and in the labelled ones no more than in those which are not labelled; although I will not deny that in many cases much assistance may be derived from the examination of them in deciphering more or less obscure descriptions.

Is it to be supposed that Mr. Stephens, who lived twenty years after the publication of his work, had not made many changes in his collection, or had not re-arranged a great part of it in the course of those twenty years? And I can state positively that he must have done so, if his collection is now all in order. For in 1847 (when I examined his *Carabidæ*) the difficult genera *Harpalus*, *Amara*, &c., and especially *Bembidium*, were in great confusion; many species had no labels at all, and many specimens were *supposed* by Mr. Stephens to be his types merely from some hint in his book. And I can also add to my own the testimony of M. Mulsant, who visited Mr. Stephens with me, and who tried to determine the *Palpicornia* (which the former had then just worked up), *but who abandoned it on account of the disorder which he found that family to be in.*

And must it not be considered rather as a mere chance than *as a proof of the authenticity* of the specimen, if the example which

bore a label in 1860 is the very one which Stephens in 1832, or earlier, had on his table when he composed his book? In many cases it can be proved that it is not. Of the species of *Atomaria* the only one which is clearly defined is the very conspicuous *A. gutta*, the name of which has therefore been adopted in all recent works. Now it happens that the only specimen of the Stephensian collection, and yet nevertheless labelled, is not *A. gutta*, but *A. apicalis*.

There are still some English Entomologists who repose great confidence in the so-called Marshamian types. I am far from denying that these specimens came from Marsham's collection, but are we to suppose that, as there appears always to be one example only, Marsham had always but one specimen of each species; or are we to suppose that Stephens kept but one? And what guarantee have we in the case of obscure species, when several may have been confounded, that Stephens kept the very specimen from which Marsham drew up his specific diagnosis?

The list of synonyms given in our books is nothing more than the history of our knowledge of each species. When a species is fully known (*e. g. Carabus auratus*) the history of our knowledge loses most of its interest, and I think that we need not then continue to store up all the bibliographical references which we may collect, and religiously to preserve the memory of such names, which are no longer of any interest to the student. Our quotations may then be very well restricted to a few of those works by which our knowledge has been advanced.

XXVI. *Observations upon the Nomenclature adopted in the recently published "Catalogue of British* Coleoptera," *having reference more especially to Remarks contained in Dr. Schaum's Paper "On the Restoration of Ob-" solete Names in Entomology."* *By* G. R. Waterhouse, *Esq., V.P.Z.S., &c.*

[Read 2nd June, 1862]

Dr. Schaum, in his paper above referred to, commences by stating that I have furnished positive information on a great many species established by English Entomologists, and especially by the late Mr. Stephens, which no continental author had ever been able to identify. He objects to the adoption of the names substituted by me for those of certain other authors, and makes it appear that the descriptions of the species to which they belong are utterly valueless.

I have given certain information, and as I take it, the points now to be settled cannot be disposed of "en masse," but that each separate case of the adoption of one name instead of another, must be taken on its own merits. I protest against the introduction, into this matter, of sweeping clauses respecting descriptions said to be utterly false and valueless, and allowing it to appear, by inference, that they apply to the cases in question. I have endeavoured to deal fairly, and in accordance with the custom among naturalists, in each separate instance, but in the multitude and complexity of the cases I had to deal with, I cannot for a moment suppose that I have always been correct in my conclusions ; and I hope when any objections to my mode of proceeding arise in any particular instance, that I shall confess I was wrong, if I was so, and act accordingly. I protest particularly against the earliest statement in Dr. Schaum's paper, that no continental author had ever been able to identify Stephens' species; and for this reason, that Dr. Schaum does not state whether he has any good ground for believing that continental Entomologists have really taken the necessary, or, I may say, the *usual* pains to identify them. How is it that the continental Coleopterists did not discover that *Ischnopoda longitarsis* of Stephens was the same as *Calodera longitarsis* of Erichson, subsequently published? The mere identity of the specific name, when Erich-

son first published it, might have suggested the inquiry, and if Stephens' description had been referred to, I am convinced that no doubt on the matter could have existed. But if Erichson omitted to notice the original source of the name in his "*Küfer der Mark Brandenburg*," he makes good the omission in his "Gen. et Sp. Staph." (p. 66), where he says "a cel. Dom. Spence ex Anglia missa nomine *Aleocharæ longitarsis*, Kirby." The specific name is also referred to Kirby by Stephens. I have met with other cases as strong as this, and it has forced upon me the conviction that continental Entomologists have certainly taken very little pains in the matter. Again, what is more common in cases of difficulty in identifying described species, than the custom of consulting the specimens from which the descriptions were taken? The Berlin "Entomologische Zeitschrift" furnishes us with numerous identifications through such means; why are we not to be allowed to adopt the same course? Dr. Schaum says, "no great faith can be placed even in the so-called typical specimens of the Stephensian or any other collection;" and no doubt he can bring forward numerous cases in which they are more than doubtful, but to make good the point he had in view, he should have shown that I had arrived at my conclusions from such sources.

Dr. Schaum furnishes a certain genus (*Ischnopoda*, Steph.) in illustration of his views: I intend to confine myself as much as possible to this particular case in the following remarks. In this same genus, then, there is a certain species described under the name "*foveata*." I am particularly anxious to draw attention to the description of this insect. The group to which it belongs I have long studied with great attention, and I will here reiterate a remark which I formerly made, before the question now before us had been raised; it is in substance,* that without the help of a certain number of well-named specimens of *Aleocharidæ* which had been placed in my hands, I did not think I could have determined other (unnamed) species from the descriptions either of Erichson or Kraatz. Not that the descriptions are not excellent, but that the distinctions of the species are so excessively difficult of realization. Having said this, it will appear a very strong statement when I say that the description in Stephens' "Illustrations" (vol. v. p. 111, sp. 6), taken by itself, applies perfectly, in all respects, to one particular species of the *Aleocharidæ*, and will

* See my "List of the British Species of *Aleocharidæ*," published in the "Zoologist" for June, 1857.

apply to no other species,—at least, known to Erichson. The insect is *Homalota occulta* (♂) Erichson. The insect which stands as "*foveata*" in Stephens' collection is *Homalota gregaria*, and of course does not agree with his description. But I trace that description back to Kirby (I have in fact the original Kirbian MSS. in my hands); I refer then to Kirby's collection, and there I find the insect ticketed and named "*foveata*." At two distant periods I examine it most carefully, and with the same result—it is the same as the *Hom. occulta*, Erichson. This will serve to show in what way I have availed myself of the help of the so-called type specimens. But Stephens' description has this defect—*it is put in the wrong place:* in Stephens' "Manual" it is inserted in the genus *Ischnopoda*, a genus which has for one of its characters "all the tarsi 5-jointed," whilst "*foveata*," being a *Homalota*, has but four joints to the anterior tarsi. Now let Dr. Schaum look to my Catalogue (p. 18, sp. 21), and he will there see that *Ischnopoda foveata* of Stephens is sunk into a synonym, Erichson's more recent name taking precedence. Seeing that in similar cases the rule adopted is a more lenient one,*—seeing that the species with the author's name attached is regarded as a symbol of a certain amount of work done by him, and serving, more or less, to advance the branch of natural history to which he had devoted himself; and that under these circumstances, other naturalists *generally* appear to be very loath to obliterate that symbol—I say, being aware of this, I think I did wrong in not putting the earlier name first. But as a mere matter of fact I did not do so, and from this it will appear that I was under the influence of a certain amount of bias in favour of that great Entomologist, the author of the "*Genera et Species Staphylinorum;*" and to this I must plead guilty.

I will now come to the main point of the paper, so far as facts are concerned, and I must quote Dr. Schaum's statement in full to avoid misunderstanding on this part of the subject. The paper then states that "Mr. Waterhouse changes the name of the genus *Chilopora*, Kraatz, (group of *Aleocharæ*), which Kraatz had established on *Calodera longitarsis*, and *rubicunda*, Er., and had well defined, into that of *Ischnopoda*, Steph. On referring to Stephens' work I find *Ischnopoda* characterized in these words,—"Head nearly sessile, thorax longer than broad, elytra wide, body slender, abdomen acute at tip, legs slender, tarsi, especially the hinder,

* Several of the species described by Erichson in the genus *Oxypoda* have, according to Dr. Kraatz, but four joints to the anterior tarsi, although by the generic characters laid down for *Oxypoda* they should have five.

long, all five-jointed." According to my opinion it is an insult to science to establish a genus of *Aleocharæ* by such a diagnosis, which is so vague that it will apply to almost any *Staphylinide*, and which does not afford the slightest character by which the genus may be distinguished. Nevertheless Kraatz might have adopted the name, and probably would have done so, if it could have been said that the genus *Ischnopoda* in reality corresponds with *Chilopora;* but in Stephens' work it is composed of seven species, the first and last of which (specifically identical) alone belong to *Chilopora;* the second and third are *Tachyusæ*, the sixth is a *Homalota,* and the fourth and fifth appear to be no longer extant, as no mention whatever is made of them in Mr. Waterhouse's Catalogue (but they were certainly not *Chiloporæ*). Can it, under these circumstances, be said that the genus *Ischnopoda,* which is not characterized at all, and which is an assemblage of species belonging to at least three different genera, is identical with *Chilopora,* merely because the first species happens to belong to it?"

In the last sentence the identity of the *Ischnopoda longitarsis* of Stephens with that of *Chilopora longitarsis* of Kraatz is admitted for the first time. With regard to the fourth and fifth species comprised in the genus *Ischnopoda* by Stephens, and which are said to be unaccounted for, the remark applies to the fourth only; the original description in that case is from an insect in a collection of which I can learn no tidings. The fifth species, *ruficrus*,* will be found in the synonyms of *Homalota gregaria.* The eighth species was apparently (like the fourth) unknown to Stephens, and if we deduct these two, the remaining species, as Dr. Schaum correctly states, belong to three different genera, viz., *Chilopora,* Kraatz (=*Calodera*, p. of Erichson), *Tachyusa,* Er., and *Homalota,* Er. The genus *Ischnopoda* then, containing no less than three distinct generic forms, could not be regarded as equal to the genus *Chilopora* of Kraatz, which contains only one of those forms, and this constitutes, according to Dr. Schaum, the great stumbling-block which could not be got over.

Let us see how similar cases have been dealt with by Erichson and Kraatz. The genus *Homalota* has just been mentioned,—I will first take that. This genus was originally founded by Mannerheim upon a single species, the *Aleochara plana* of Gyllenhal. Erichson, supposing the species now known as *H. cuspidata* to

* The true *ruficrus* by description; the insect which is so named in Stephens' collection is *Isch. longitarsis.*

be the type of Mannerheim's genus, proceeds to criticise the main character laid down by Mannerheim, and ultimately arrives at the conclusion that, *by inference*, it suggests that the posterior tarsus is short (the real character given being that the claw-joint is long), and, such being the case, belongs not to the *H. plana* only, but to the greater part of the species which Mannerheim included in his new genus *Bolitochara*. On the other hand, as Mannerheim among his characters for the genus *Bolitochara*, says, "*tarsorum articulus primus subsequente longior*," he has by this given a character which excludes nearly all the species he places in the genus. Erichson, however, *adopts* Mannerheim's name *Homalota*, for the great mass of the insects which Mannerheim regarded as members of his genus *Bolitochara*, and includes likewise among them the *H. plana*. *Bolitochara*, Mannerheim, is retained only for one or two species in which the posterior tarsi have the basal joint elongate. I do not object to this, but it furnishes a striking case of difficulties surmounted (much greater than those alluded to by Schaum in the case of Stephens' genus), and yet the original author's names being retained.

Chilopora of Kraatz, it has been just stated, forms part of Erichson's genus *Calodera*. The genus *Calodera* however is referred to Mannerheim, not because it was properly characterized, but on account of the species it contained. Erichson says he regards it as only a slight error on Mannerheim's part when he gave the joints of the tarsi as equal in length, though, by the way, I may remark, that this same character helps to separate the enormous genus *Homalota* from the great mass of the *Aleocharidæ*, and does not belong to *Calodera*. Erichson adds other species to Mannerheim's genus, noticing at the same time that they differ slightly from the type, and upon these additional species Dr. Kraatz subsequently establishes the two genera *Chilopora*, and *Ilyobates*. Here then we have the case of a genus (*Calodera*, Erich.) containing three distinct forms; and supposing the original name of the genus had been Erichson's, I should like to ask Dr. Schaum whether that name would have been sunk because it contained three genera, and therefore could not be regarded as equal to *Calodera*, Kraatz, which is supposed to contain but one type of form? Were I to depart from the particular case brought forward as an example, and from those genera immediately connected with it, I need scarcely say that I could furnish innumerable instances where, in breaking up an old genus, the old name is retained for one of the divisions,—this is in fact the rule. But I need say no

more on this head, and there only remain the imperfections of Stephens' definition to be dealt with;—and here I must express my regret that the author of the paper should have made use of such strong terms in relation to them, when it must be apparent to any one who has paid much attention to the subject that HE certainly has not done so. Had the *Aleocharidæ* been studied by Dr. Schaum, it would have been evident to him that it was not merely because *Ch. longitarsis* was the first species in the genus that it ought to be regarded as the type, but because the characters laid down by Stephens belonged to that species alone. In the period which elapsed between the publication of his "Illustrations" and "Manual," Stephens found that nearly all his (or rather Kirby's) sections of the great group *Aleochara* had been converted into genera. Some few of these, it is true, had, immediately *before* the publication of the "Illustrations," been raised to the rank of genera by Mannerheim; but there was one remarkable exception: his section "A." was, as it appeared to him, left untouched; and as the insects standing to represent the species of that section in his cabinet, nearly all of them presented a peculiar aspect, very unlike that of any of the other *Aleocharidæ* which had already found a place under some appropriate generic head, he thought they should also form a genus. He gave a generic name, accompanied by certain characters, which, in Dr. Schaum's opinion, are "an insult to science." We are not favoured with the author's views as to what generic characters should be, but we may presume that the rule laid down by him for specific characters, [viz. "the essential condition to a species being described is this, that (if not all the principal) at least *some* of its distinctive characters are pointed out, so that *some possibility* exists of its recognition by another Entomologist,"] may be applied to generic. We will test the characters laid down by Stephens for the genus *Ischnopoda* by this rule, making no allowance for the plan and nature of the work in which they occur, which rendered it necessary they should be comprised in three or four lines. Stephens says "*head nearly sessile*" (placing the genus, so far as this character is concerned, between those genera in which he gives, as a character, head "exserted," such as *Autalia*, *Falagria*, *Calodera*, &c., and those which have the head "*sessile*," such as *Polystoma*, *Aleochara*, p., *Zyras*, *Pella*, &c.); "*thorax longer than broad; elytra wide; body slender; abdomen acute at tip; legs slender; tarsi, especially the hinder pair, long*" (characters common to nearly all the insects standing as species of *Ischnopoda* in his collection, and belonging to no other section of the *Aleocharidæ*,

not already separated under generic heads, in the "Manual"); "*all five-jointed*," a character that belongs to only one of the *species* of *Ischnopoda*, and that stands at the head of the genus. It is true that the *Ischn. ruficrus* and *I. attenuata* of Stephens' collection, have the same character, but they are the same as his *I. longitarsis*. Here then "at least some of the distinctive characters are pointed out," and there is more than "*some possibility*" of the recognition of the genus, and it was rendered the more easy from the fact that *the type of the genus was a perfectly well known insect.*

The wonderful improvements made to the microscope during the last twenty years have given to Entomologists a power of examining minute structure* unknown at former periods, and with this help the structure of the parts of the mouth has been studied in the minute *Staphylinidæ*, and has furnished much help in their classification. As an instance of the minute application of the instrument, I will give (from Dr. Kraatz's Naturg. der Ins. Deutschl.) the Latin diagnosis of the two neighbouring genera *Calodera* and *Chilopora*. This latter genus is = *Ischnopoda*, Stephens, it will be recollected.

Calodera (Mannerh.), Kraatz.	Chilopora, Kraatz.
Maxillæ mala interiore intus summo apice spinulis 6† longioribus ciliata.	Maxillæ mala interiore intus apice spinulis longioribus ciliata.
Ligula brevis bifida.	Ligula brevis, bifida, laciniis acuminatis.
Palpi labiales distincte 3-articulati, articulo secundo breviore.	Palpi labiales distincte 3-articulati, articulo secundo breviore.
Tarsi omnes 5-articulati, postici articulo primo elongato.	Tarsi omnes 5-articulati, postici articulo primo elongato.

Having no doubt of the accuracy of the above definition of the leading characters of *Chilopora*, I beg to offer it to English Entomologists, that it may be added to that of Stephens' genus *Ischnopoda*, and thus render it complete. In the tabulated cha-

* Stephens' grand instrument (and one he highly valued), for poking into the minute structure of insects, consisted of an extremely minute lens (about three-sixteenths of an inch in diameter) inserted into a round flat bit of brass, about the size of a shilling, and with a short brass handle. I have seen him use it often, and rub his eye afterwards, as well he might. It is now in my possession, but I have never had the courage to use it.

† The corresponding diagnosis of the genus *Ilyobates* differs from that of *Calodera only* in having "12" (instead of "6") in the first paragraph.

racters of the genera of *Alcocharidæ* of Dr. Kraatz's book, the anterior tarsi are, by accident, given as four-jointed: the above definition, however, subsequently given, is correct.

In looking through my Catalogue, I find that, excepting in the *Staphylinidæ*, the cases in which Stephens's names have been placed above others more or less in use on the Continent, are by no means numerous, and I shall say nothing about them on the present occasion. But the case of the *Staphylinidæ* is rather peculiar, and I will take this opportunity of stating what I know about the matter: although some parts of this statement may have but a very indirect connection with the main point of my paper, it will be useful. In Stephens' work are published MSS. furnished by Kirby,* which must have been prepared (as I judge from evidence furnished in the MSS.) at least fifty years back; and, in fact, *very* nearly at the same time that Gravenhorst's works were in hand. It is very clear to me (having gone minutely into the subject) that Stephens had never paid much attention to the group; but this I know (from himself) that having been furnished with abundance of matter by Kirby, he visited that Entomologist's residence, and stayed with him a considerable time, for the purpose of identifying the insects in his own collection with those of Kirby's;† a most important point, as he intended publishing Kirby's descriptions. In this way a certain amount of correspondence was brought about in the nomenclature of the two collections. I word the matter in this way, because there was likewise brought about a certain amount of disagreement; for in the minute and obscure species many of the supposed identifications were erroneous. Having thus compared and named his species, Stephens informs us (see Illustr. v. p. 134), that he found in his own collection, in the *Aleocharæ* alone, seventy-six species which he did not find in Kirby's cabinet: these, then, are given in the "Systematic Catalogue" as new species—for the most part at least. Lastly, Stephens undertakes a general work on the insects of this country (not the *Coleoptera* alone), which is to appear in monthly parts, and must be written "after office hours," as we say, for he was engaged all day in a government office. Those who have not tried it (or something similar) can form but a very imperfect idea of such an undertaking—a difficult subject to be dealt with over-

* There exists plenty of evidence that Stephens was furnished with MSS. relating to many other groups besides the *Staphylinidæ*.

† Of course Stephens could not take his collection down into Suffolk, but he took a series of specimens, and these specimens were ticketed in a peculiar manner, and their tickets still remain attached.

night, and printer's boy for "more copy" in the morning! His extensive work was produced under such circumstances. There is good and bad matter in it, and the question arises, how far the latter vitiates the former? Seeking for a solution of this question, it appeared to me to be answered thus: we will take all the good we can get out of this book, but we cannot undertake to deal with the detail. As least this I take to be the true interpretation from what has been done.

In 1829 Latreille furnished us with a general sketch of the genera of *Staphylinidæ* (with one or two exceptions) known at that time, amounting to eighteen in number. In the same year appeared Stephens's "Systematic Catalogue," which furnishes an outline of the labours of Kirby (with some additions, chiefly by Leach) in the same group. In the following year Mannerheim's "*Précis d'un nouvel Arrangement de la Famille des Brachélytres*" is published, and here are adopted several of the genera proposed by Kirby and Leach, and with the same names, such as *Autalia*, *Falagria*, *Dinarda*, *Bolitobius* and *Acidota*; and others seem to have been adopted, but with other names substituted, such as *Mycetoporus* (for *Ischnosoma*), *Hypocyptus* (for *Cypha*), *Eulyssus* (for *Gyrohypnus*), *Cryptobium* (for *Ochthephilum*), and *Trogophlœus* (for *Carpalimus*). Early in the year 1832 all the new genera indicated in Stephens' Catalogue were characterized in the "Illustrations." Ultimately, after careful scrutiny by Erichson and Kraatz, the greater portion of these genera (twenty-three in number) were adopted, and with the names originally proposed. I especially notice this point, because I think it clearly shows every disposition on the part of the two great masters in Staphylinology to do justice to the English authors; and with regard to the *Ischnopoda* question, raised by Dr. Schaum, I have a strong impression that Dr. Kraatz was not exactly aware how the case stood, or the name given by Stephens would have been adopted. Respecting the Stephensian names adopted by me for certain *species* of *Staphylinidæ*, in preference to other names subsequently applied to the same insects, I will venture to say that the descriptions of those species fulfil the conditions insisted upon by Dr. Schaum. In proof of this I may say that *they were nearly all determined by me from the descriptions*. I say "*nearly* all," though I am not aware of any exception, for I cannot take up every individual case at this moment. They are *nearly* all Kirbian species, and although the specimens (at least nine-tenths of them) from which the descriptions were taken are now in the Collection of the Entomological Society, they were

not named when I commenced my work. These specimens were all numbered by Kirby, but the names had to be sought for in his MS. Catalogue. When, however, I referred to this source for information, I found that the numbers did not run on, but that each number was repeated many times. In every minute section the numbering recommenced; and thus, I think in the *Aleocharæ* alone, there must have been as many as twenty insects bearing No. "1;" and what was still more bewildering, there was no distinction made between the nines and the sixes. I could only see when I took a certain insect up that its number was either "9" or "6," but could not tell which. I had to compare it with the descriptions of all the species distinguished by both numbers. Thus the descriptions were pretty severely tested. In a *very* few cases I did not succeed to my satisfaction, and consequently passed them over. These then are *not* the species of which Dr. Schaum says, "Mr. Waterhouse did not ascertain these older names by the study of the books, but merely by the investigation of real or supposed typical specimens;" but they are species which, according to his own rule, he would admit because they are recognisable through the descriptions. It is more especially the Stephensian and Marshamian species, and so called types, that Dr. Schaum alludes to, but *in practice* he puts all into the same category.

I perfectly admit all that Dr. Schaum says of the Marshamian types—they *may* have been changed, &c., &c., &c.

I do not feel myself called upon to say those specimens marked as the Marshamian types in Stephens's collection are really what they profess to be, but I feel myself bound to see in each individual case whether the so-called type was *in all probability* (through its agreement with the description) what it professed to be; finding it *was* probable, through this source, it was rendered still more so by its being ticketed with a peculiar ticket bearing the number of the species as it stands in Marsham's book; and further through the circumstance that the number in question is in old writing—and certainly not Stephens'.

Then these remarks, and others of a similar nature, contained in the paper under consideration, do not apply (except by inference) to the nomenclature adopted in my Catalogue.

"The restoration of obsolete names" for others in common use is certainly, under such circumstances as those depicted by Dr. Schaum, calculated rather to embarrass than to forward science; and I fully agree with what my excellent and talented friend says on this subject, and I hope and believe, when he really gives his

attention to the details of the matter which has been discussed in the foregoing pages, that he will find we essentially agree on most other points dwelt upon in his paper.

So far as France and Germany are concerned, much has been done towards elucidating the nomenclature of the *Staphylinidæ*, and bringing about an accordance in the names adopted, but I do maintain that little or no pains have been taken with regard to the English authors. Our collections have been consulted with the view of clearing up difficulties in several other groups of *Coleoptera*, but not this one. It appeared to me that it was required (and very properly) of us English Entomologists, that we, making use of the facilities we possess, should "lend a hand" in the matter, but I must say that the entire rejection of the information furnished, through such a source, is a very remarkable proceeding.

When a described species can, *by any means*, be determined, so as to leave no reasonable doubt of the identification, it appears to me desirable that the name given to the species by the describer be adopted, provided that name be the earliest the species has received; in fact, this appears to be the general opinion of Entomologists.

XXVII. *On the Development of* Lonchoptera. By John Lubbock, Esq., F.R.S., F.L.S., F.G.S.

[Read 5th May, 1862.]

At the February meeting of the Entomological Society, I exhibited a pretty Dipterous larva, of which I had found two or three specimens under logs of wood in Kent. This larva appeared to be unknown to the members present; Mr. Walker indeed thought that he had noticed it himself in similar situations, but he was ignorant to what species it belonged. Mr. Westwood suggested that it was most likely the larva of some form allied to *Platypeza*, and wished that if possible the point should be determined by breeding. Having since found two or three more specimens in Kent and several near Leeds, I adopted Mr. Westwood's suggestion, and, though most of my specimens died, I was fortunate enough, on the 11th of March, to obtain from one of them the perfect insect.

This I immediately forwarded to Mr. Walker, who kindly

identified it for me as a species of *Lonchoptera* (probably *L. lutea*, P.), and thereby proved the accuracy of Mr. Westwood's opinion, since *Lonchoptera* is placed by that gentleman in the same family with *Platypeza;* and though Mr. Walker separates the *Platypezidæ* from the *Lonchopteridæ*, still in his arrangement these two families come next to one another.

As the small active flies forming the genus *Lonchoptera* are said by Mr. Walker (Diptera Britannica, vol. i. p. 223) to "abound from the beginning of spring till the end of autumn, on shores, marshy woods, and in most grassy spots," it seems extraordinary that their transformations should be altogether unknown. Still I am able to find no description of them, and as the group is one, according to Mr. Westwood, "of difficult location" (Westwood's Introduction to the Modern Classification of Insects, vol. ii. p. 554), a short account of the development will probably not be considered out of place in the Transactions of the Entomological Society, particularly as the transformations do not appear altogether to favour the views generally held as to the affinities of these genera.

The larva of *Lonchoptera* is transparent, tending to brown; when full grown it is about one seventh of an inch in length and one thirteenth of an inch in breadth, being, when the head is retracted, of an oval form; in shape it is much depressed. Seen from above, the body, exclusive of the first division or head, consists of nine segments, which project laterally beyond the softer parts, and beneath which the anterior segment can be altogether retracted. A peculiar and elegant appearance is given to the larva by the presence of four long setæ in front and two at the posterior extremity, as well as by the ornamentation of the lateral margins. The posterior segment has three, the seven preceding have two small spines on each side. Along the sides between the spines on all these segments, and along the posterior margins of the seven posterior, as well as on the first margin of the first thoracic segment, are a number of dark brown lines, about $\frac{7}{2000}$ths of an inch in length (those, however, on each side of the spines being much shorter), and about $\frac{3}{4000}$ths of an inch from one another; they lie at right angles with the margins of the segments, and are connected at the base by a shaded line, so as altogether to form a very pretty and peculiar border. This border is in fact produced by a great number of oblong processes of the integument, the brown lines being the lines of junction between them, as may occasionally be seen when any of the processes are accidentally detached from one another, as in Pl. XI.

fig. 7, *d*. On the posterior segment, and close behind the last of the three lateral spines, is the large spiracle, which is situated on a short projection. Behind this, again, on the posterior margin of the body is a long seta, at the base of which and on the median side is a short process terminating in a spine like those on the side of the body. The seta is about $\frac{1}{20}$th of an inch in length. The second and third (mesothoracic ?) segments differ from the posterior ones in not having any border along the posterior margin, while the second segment offers the additional peculiarity of having a border along the front.

The second segment, which is received into and as it were fills up a recess in the mesothorax when the head is retracted, gives the body a regularly oval form, though somewhat, as it were, cut off at the posterior extremity. It bears also on each side of the middle line a seta about as large as that at the posterior extremity, and at its posterior angles are also two spines, the anterior of which is $\frac{9}{2000}$ths of an inch,—the posterior, though broader, only $\frac{3}{2000}$ths of an inch,—in length. The head, when extended, terminates in a transverse spindle-shaped body, having two lateral tapering lobes, which are slightly curved at their extremity, and are clothed with delicate bristle-like papillæ. On each side of the basal portion open the anterior spiracles, and in front of them, but rather towards the middle line, is on each side a seta (Pl. XI. fig. 1), about $\frac{1}{30}$th of an inch in length. This seta is generally directed forwards, while the four long thoracic and abdominal setæ are often directed perpendicularly upwards. In front of the long spine on the anterior part is a short unjointed appendage (Pl. XI. fig. 4), and in front of this again and still nearer the middle line is another still shorter (Pl. XI. fig. 3).

The upper margins, as already mentioned, project like wings beyond the softer parts of the body. Seen from below, these parts offer indistinct segmental divisions, and each segment has a lateral papilla, which probably fulfils the functions of a foot. At the posterior margin of the fleshy parts are eight papillæ (Pl. XI. fig. 8, *a*), some of which, however, are not very conspicuous. Beneath this posterior margin lie two large lobes, shaped somewhat like a short human foot (Pl. XI. fig. 8, *b*), attached as it were by the ankle.

Both the upper and under walls of the body are so transparent that many of the internal organs can be seen through them. The upper surface of the fourth segment (exclusive of the head) has on each side near the front border and almost over the tracheal tube, a small round orifice (Pl. XI. fig. 1, *g*).

When the larva is full grown, it detaches itself from the skin, which retains its form, and within which the insect changes into a white, opaque, fleshy grub (Pl. XI. fig. 9), consisting apparently of thirteen segments, which gradually diminish in size from one end to the other. There are no limb-cases. The skin is covered by small papillæ. It is one-tenth of an inch in length.

According to analogy the pupa should be "incomplete;" it is probable, therefore, that the legs and wings make their appearance at a later stage. If this be so, the perfect form is only attained after passing through three well-marked stages.* I regret, however, that the specimens at my disposal did not enable me to decide this point.

When about to emerge it splits the old larva-skin between the 2nd and 3rd segments from *a* to *a* (Pl. XI. fig. 1), and along the back down the central line of the 3rd, 4th and 5th segments of the body, from *b* to *b* (Pl. XI. fig. 1).

Mr. Westwood, while admitting the difficulty of the case, places *Lonchoptera* with *Platypeza* in the *Scenopinidæ*, close to the *Dolichopidæ*, and among the *Tanystoma*. Mr. Walker, though he removes *Scenopinus*, and raises *Platypeza* and *Lonchoptera* into two separate families, leaves them still in the same position between the *Dolichopidæ* and the *Syrphidæ*. In this classification the nature of the metamorphosis is mainly relied on. In the *Notacantha* (*Stratiomys*, *Sargus*, *Beris*, &c.) the metamorphosis is coarctate, but the skin of the larva retains its form; in the *Tanystoma* (*Tabanus*, *Anthrax*, *Asilus*, *Dolichopus*, &c.) the pupa is incomplete; in the *Athericera* (*Musca*, *Conops*, *Œstrus*, *Syrphus*, *Volucella*, &c.) the metamorphosis is again coarctate, but the larval skin contracts and hardens into a kind of cocoon within which the transformation is effected.

These differences are of much importance. "The great character," says Mr. Westwood, "by which the *Stirps* (*Tanystoma*) is distinguished from the *Notacantha* and *Athericera*, consists in the nature of the metamorphosis to which all the species are subject.

"The larvæ resemble worms, being nearly cylindric, without feet, and with a scaly head of a constant form, always furnished with unguiform retractile appendages, enabling them to pierce the substances whence they derive their support: for the most part, they reside under-ground, and are but little known. They shed their skin previous to assuming the pupa state, in which, to

* In a future memoir I hope to be able to show that this remarkable fact is not so anomalous as it at first sight appears.

a certain extent, they resemble the imago, having the various limbs enclosed in distinct sheaths, and folded upon the breast. The perfect insect escapes from this state by means of a slit down the back."

As we have seen, the development of *Lonchoptera* does not answer to the above description, and the genus must, therefore, be removed from the *Tanystoma* altogether. The pupa of *Platypeza* is not known, but it is probable that this genus, and perhaps one or two others, must eventually follow the fortunes of *Lonchoptera*. *Scenopinus*, on the contrary, whose transformations have been described by Bouché, and more recently by L. Dufour (Ann. Soc. Ent. France, 2 Ser. T. 8, 1850, p. 493—6), belongs truly to the Tanystomatous type.

Our knowledge of the *Diptera* is not yet probably so advanced as to enable us to arrange them correctly; the numerous forms which still remain undiscovered, and the many points in their metamorphosis and anatomy which have yet to be described, will assuredly modify our views as to their classification and mutual affinities. I feel also strongly that my own acquaintance with the subject does not justify me in expressing any very decided opinion. I may, however, be permitted to suggest that the true position of *Lonchoptera* is among the *Notacantha*, not very far perhaps from *Sargus*. Not only does the metamorphosis belong to the type which is characteristic of this group, but the larvæ of the two genera are by no means dissimilar. It must be confessed that the perfect insects of these two genera differ in many points, but not in more probably than those which already distinguish *Lonchoptera* from the *Dolichopidæ* and *Platypezidæ*.

Internal Anatomy.

My principal object being the determination of the species to which my larva belonged, I only sacrificed one specimen for anatomical purposes: when the first imago of *Lonchoptera* made its welcome appearance, only one larva and one pupa were living; these I immediately put into spirits of wine.

Having therefore had but two larvæ for dissection, and one of these being in an unfavourable condition, I cannot give anything like a complete account of the internal anatomy. Moreover, the digestive organs of my two specimens were so dissimilar, that in all probability one of them was about to become a pupa.

The disposition of the tracheæ offers no remarkable peculiarities. As in the larvæ of other allied *Diptera*, there are four spiracles only, two on each side; one at the posterior extremity,

the other on the first segment of the body, immediately behind the head. From the one spiracle to the other, the trachea runs in a gently undulating course, and without any material alteration of size. The two lateral tracheæ are connected together by two transverse branches (Pl. XI. fig. 1, *ff*), one of which is situated in the first segment of the body, the other in the last. In addition the lateral tracheæ give off two small branches in the posterior segment and one in each of the others.*

Digestive Organs.—The digestive organs may be divided into pharynx, œsophagus, crop, stomach, intestine and rectum, with the malpighian vessels and salivary glands as accessary organs.

The *pharynx* is strengthened in front by a scaffolding of chitine. It has a length of about $\frac{1}{45}$th of an inch, and is shuttle-shaped, tapering slightly at each end. It is strengthened by being thrown into longitudinal folds, which run from one end to the other at distances of about $\frac{1}{400}$th of an inch, and between which again the membrance appears to form both longitudinal and transverse folds. The latter, however, are very close together, and are, perhaps, small chitinous thickenings of the membrane.

The œsophagus is narrow and cylindrical. It is $\frac{1}{26}$th of an inch in length and only $\frac{1}{800}$th in diameter.

The crop is small and sphærical; in my first specimen it was divided into two parts by a central constriction. The second specimen however, which had been preserved in spirits of wine, did not show any such structure. In living animals, or in those just dead, the form of the stomach depends, no doubt, very much on the condition of the strong transverse muscles with which it is provided. In my specimen, which had been in spirits, it was simply fusiform.

The malpighian vessels are long, and, I think, four in number, but upon this point I am unable to speak positively.

The salivary glands are large. In form they are cylindrical, and are connected with the mouth by short branched tubes. The glands are formed of large cells, the walls of which can in most cases easily be perceived. They are about $\frac{1}{330}$th of an inch in diameter, with a nucleus about $\frac{1}{900}$th of an inch, and a small nucleolus.

Nervous System.—The sub-œsophageal portion of the nervous system is condensed into a single mass, as is usually the case where the segments do not admit of much motion. In the pre-

* I do not find, however, in my sketch from which fig. 1, Pl. XI. is taken, any branch in the two first segments.

sent case the ganglionic mass is cylindrical, or somewhat pea-shaped, showing internal traces of a double column, with fibrous prolongations to the nerves, and intermediate cellular(?) matter.

There seemed to be eleven pairs of nerves. I could indeed only make out ten nerves, but between the seventh and eighth was a space, which would about leave room for another nerve; in the centre of which, moreover, was a tracheal tube exactly like that which accompanies the other nerves. The commissures are short and broad, or rather the œsophagus may be said to pass through a small orifice between the two great supra-œsophageal ganglia.

DESCRIPTION OF PLATE.

1. Outline of larva seen from above. × 30.
   - *a a* and *b b*. The lines along which the larval skin splits to admit of the escape of the perfect insect.
   - *c*. Anterior spiracle.
   - *d*. Posterior do.
   - *e*. Longitudinal trachea.
   - *f f*. Two transverse branches.
   - *g*. Minute orifice on the fourth segment.
2. First three segments, with the head retracted. × 60.
3. } Organs on the head, apparently adapted for sensation, and possibly repre-
4. } senting antennæ. × 250.
5. Portion of margin. × 60.
6. Skin of dorsal surface. × 250.
7. Part of the last segment.
   - *a*. The large posterior seta.
   - *b*. The spiracle.
   - *c*. The trachea.
   - *d*. A place where two of the lateral processes have been slightly separated from one another.
8. Posterior end of body, seen from below. × 30.
   - *a*. The tubercles of the posterior margin.
   - *b b*. The foot-like lobes.
9. Insect in the second stage. × 30.

XXVIII. *Notes on* Chalcidites, *and Characters of undescribed Species. By* F. Walker, *Esq., F.L.S.*

[Read 7th July, 1862.]

The *Chalcididæ* described by Fabricius are hardly characterized with sufficient precision to identify the species. *Chalcis dimidiata*, Fabr., may be identical with *Smiera Lamyrus; C. pyramidea*, Fabr., is parasitic on *Epipone nidulans*, and *C. annulata*, Fabr., infests the pupa of *Ophideres materna*. *C. Mneston* is a synonym of *C. annulata*. *Smiera amœna* (parasitic on the pupa of a *Thecla*) and *S. debilis* have been described by Say. Klug, in his "Symbolæ Physicæ," describes the following species, inhabiting Egypt and Arabia:—*Smiera pensilis, Chalcis rubens, C. decorata, C. albicrus, C. brevicornis, C. pubescens, C. agilis* and *C. pumila*. *C. albicrus* feeds on the pupa of *Euplœa Chrysippus*, and *C. Euplœæ* is parasitic on an East Indian species of *Euplœa*, and perhaps is the same as *C. Lasus*. *Chalcitella evanioides*, West., inhabits the Mauritius.

The European *Smiera nigrifex* is a native also of North America, where its characters are slightly modified. In the *Smieræ* of the latter region there is a transition of the colour of the species from black to yellow and to luteous, and the luteous species abound in South America. A species of *Smiera* from Florida is included with the West Indian *S. fulvescens* in the British Museum list of *Chalcidites;* it may be termed *S. transitiva*, and it differs from *S. fulvescens* in having a black stripe on the thorax and a black streak on each of the coxæ; the wings are a little darker in colour, and the size is rather larger.

Chalcis minuta of Europe also appears in North America, but with more limpid wings than those of the European race. *Phasgonophora sulcata* is the extreme form of a group of *Halticella*, which has some representatives in South America, but chiefly abounds in the Eastern Isles.

In Mexico *Smiera Pylus* hardly differs from the West Indian *S. punctata*. The distinction between *Smiera* and *Chalcis* with regard to the relative length of the petiole is obliterated in *S. tenebrosa*, though the latter species does not differ from *Smiera* in its other characters.

The West Indian *Smiera punctata* also occurs in South America, but with the black markings somewhat reduced in size. *S. leuco-*

telus, like *S. tenebrosa*, has a petiole not longer than that of *Chalcis*.

S. erythrotelus, *S. stylata* and *S. mesomelas* form a transition group between *Smiera* and *Halticella*, and are distinguished from the typical species of the former genus by the longer antennæ, the oblique face, and the short petiole.

Sect. I.

Genus Leucospis.

Leucospis semirufa.

Fœm.—Nigra; prothorax flavo tenuissimè bifasciatus; metathorax liturâ transversâ flavâ; abdomen rufum, apice nigrum; oviductus brevis; femora postica flavo marginata; tibiæ posticæ apice flavæ; tarsi flavi; alæ nigricantes.

Female.—Black, thickly and minutely punctured. Prothorax with two very slender yellow bands, which recede from each other on each side. Metathorax with a transverse yellow mark. Abdomen red, except at the tip. Oviduct reflexed to less than half the length of the abdomen. Hind-femora bordered with yellow; hind-tibiæ with yellow tips; tarsi yellow. Wings blackish.

Length of the body 5 lines; of the wings 9 lines.

Makessar, Celebes. In Mr. Saunders' collection.

Genus Metamorpha.

Fœm.—Corpus læve, nitens. Caput transversum, subquadratum. Palpi gracillimi. Antennæ graciles, pubescentes. Prothorax subquadratus, bene determinatus, humeris rotundatis. Mesothorax elongatus, parapsidum suturis distinctissimis, scutello conico, parapteris magnis. Metathorax scaber, bene determinatus. Petiolus brevissimus. Abdomen compressum, valdè gibbosum, thorace brevius. Oviductus recurvus, longissimus. Pedes sat graciles. Alæ longæ, angustæ.

Female.—Body smooth, shining. Head transverse, subquadrate, as broad as the thorax, from which it is separated by a distinct neck; front vertical. Palpi very slender. Antennæ slender, pubescent, mutilated in the specimen described; joints long. Thorax subfusiform. Prothorax much developed, not broader than long, hardly narrower in front, where it is rounded on each side. Scutum elongate, sutures of the parapsides very distinct; scutellum conical, prominent; paraptera large. Metathorax well developed, scabrous. Petiole very short. Abdomen compressed, gibbous, and forming a vertical cone at its base, much shorter than the thorax. Oviduct recurved, very much longer than the

body. Legs not incrassated; tibiæ with short apical spurs; hind-coxæ long. Wings long, narrow. Fore-wings with the humerus emitting into the disk, at a little beyond half its length, a branch from whence the two spurious veins proceed; ulna rather less than one-third of the length of the humerus; radius extending nearly to the tip of the wings, more than twice the length of the ulna; cubitus very short, furcate.

This genus belongs to the *Tonymidæ*, and is most nearly allied to *Megastigmus*, but it has also a tendency to the structure of the *Leucospidæ*, and shows the transition between these two families.

Metamorpha leucospoides.

Fœm.—Nigra; caput antice flavum nigro vittatum, oculis flavo submarginatis; prothorax flavo quadrimaculatus; parapsides, paraptera et scutellum flavo marginata; abdomen basi subtusque flavum, segmentis flavo marginatis; pedes lutei, coxis flavis nigro variis, femoribus posticis nigris apice luteis, tibiis tarsisque posticis flavis; alæ lurido-cinereæ.

Female.—Black. Head in front yellow, with a black stripe; orbits of the eyes yellow, except on each side of the vertex. Prothorax with a large yellow spot on each side, and with two triangular spots on the hind border. Parapsides, scutellum and paraptera bordered with yellow; hind border of the mesothorax also yellow. Abdomen yellow at the base and beneath; hind borders of the segments with yellow lines, which are interrupted in the middle and dilated on each side. Legs luteous; coxæ yellow, varied with black; hind-femora black, with luteous tips; hind-tibiæ and hind-tarsi yellow. Wings cinereous, with a lurid tinge; veins black.

Length of the body 6 lines; of the wings 10 lines.

Bootan. Discovered by Dr. Pemberton.

Genus Smiera.

Smiera referator.

Fœm.—Luteo-flava; caput et thorax scabrosa; caput supra nigrum; antennæ piceæ, filiformes, subtus luteæ, scapo flavo; thorax plagâ strigâque nigris, scutello inermi; petiolus brevis; abdomen compressum, lanceolatum, thorace duplo longius, segmentorum discis nigris; pedes nigro vittati, femoribus posticis dentatis; alæ cinereæ, apud costam lutescentes.

Female.—Luteous-yellow, pubescent. Head and thorax largely

scabrous. Head black above; face vertical. Antennæ piceous, filiform, luteous beneath; scape yellow. Thorax with the usual structure; disk black; scutellum unarmed, with a black streak. Petiole short. Abdomen compressed, lanceolate, much narrower than the thorax, and about twice its length; segments with black disks. Coxæ, femora and hind-tibiæ with black stripes; hind-femora much incrassated, with very large teeth. Wings cinereous, with a luteous tinge along the costa; veins black; ulna full half the length of the humerus; radius nearly as long as the ulna; cubitus very short.

Length of the body 5 lines; of the wings 6 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Smiera illata.

Mas.—Nigra; caput apud oculos flavum; antennæ basi subtus flavæ; prothorax flavo marginatus; mesothorax flavo bistrigatus et bimaculatus; petiolus longus; abdomen breve; pedes flavi, nigro cincti; alæ cinereæ.

Male.—Black. Head and thorax minutely scabrous. Head yellow about the eyes. Antennæ linear, shorter than the thorax; scape yellow beneath. Prothorax bordered with yellow in front and on each side; the foreband interrupted. Mesothorax with an oblique yellow streak on each side of the scutum, and with a yellow spot on each side of the scutellum; calli at the base of the fore-wings yellow. Metathorax roughly scabrous. Petiole slender, a little shorter than the oval abdomen; the latter very much narrower than the thorax, and not more than half its length. Legs yellow. Hind-coxæ black. Hind-femora with many very minute teeth; tips black; a large black spot on each side, dilated on the inner side and extending to the tip. Anterior femora black at the base. Hind-tibiæ black at the base and towards the tips. Wings cinereous; veins black; ulna hardly half the length of the humerus; radius nearly as long as the ulna; cubitus very short.

Length of the body 3 lines; of the wings 5 lines.

Ega. In Mr. Smith's collection.

Genus Epitranus.

Epitranus impulsator.

Mas.—Niger, gracilis; caput et thorax punctata, nitentia; caput non impressum, facie planâ perobliquâ; antennæ rufæ, sub filiformes, scapo longissimo; scutellum inerme; petiolus striatus, longissimus; abdomen ellipticum, subcompressum;

pedes obscurè rufi, femoribus posticis nigris dentatis, tibiis posticis unituberculatis ; alæ cinereæ, angustæ.

Male.—Black, comparatively slender. Head and thorax largely punctured, but not dull nor pubescent as in nearly all the species of this family. Head not impressed in front ; face smooth, flat, very oblique. Antennæ red, nearly filiform, inserted by the mouth, shorter than the thorax ; scape about two-thirds of the length of the flagellum. Thorax slightly convex, with the usual structure ; hind border of the prothorax reddish on each side ; scutellum unarmed. Petiole linear, striated longitudinally, almost as long as the abdomen. Abdomen elliptical, slightly compressed, deeper than broad ; first segment occupying five-sixths of the surface. Legs dark red ; hind-coxæ and hind-femora mostly black, the former nearly as large as the latter, which are incrassated and have a short obtuse tooth at the base, and many extremely minute teeth ; hind-tibiæ with a protuberance above, near the base. Wings cinereous, narrow ; veins black ; ulna almost three-fourths of the length of the humerus ; radius and stigma obsolete ; cubitus very short, forming a very acute angle with the costa.

Length of the body 4 lines ; of the wings 6 lines.

Makessar, Celebes. Discovered by Mr. Wallace. In the British Museum.

Epitranus observator.

Fœm.—Niger, gracilis ; caput et thorax punctata, nitentia ; caput thorace paullo latius, facie rufescente perobliquâ ; antennæ piceæ, filiformes, thorace breviores, scapo rufo ; scutellum inerme ; petiolus striatus, elongatus ; abdomen ellipticum, breve, subtus rufescens ; pedes rufi, femoribus posticis nigris dentatis, tibiis posticis unituberculatis ; alæ cinereæ, angustæ.

Female.—Black, rather slender. Head and thorax largely punctured, but shining. Head a little broader than the thorax, not excavated in front ; face reddish, extremely oblique, Antennæ piceous, linear, much shorter than the thorax ; scape red, inserted by the mouth. Thorax with the usual structure ; scutellum unarmed ; metathorax almost horizontal. Petiole linear, striated longitudinally, almost half the length of the elliptical slightly compressed abdomen ; the latter reddish beneath, much shorter than the thorax. Legs red ; hind-femora black, much incrassated, with a short obtuse tooth at the base, and with many extremely minute teeth ; hind-tibiæ with a protuberance above near the base. Wings cinereous, narrow ; veins black ; ulna a little shorter than

the humerus; radius and stigma obsolete; cubitus extremely short.

Length of the body $3\frac{1}{2}$ lines; of the wings 5 lines.

Sierra Leone. Discovered by Mr. Foxcroft. In the British Museum.

This species and the Celebes *E. impulsator* have evidently a common origin, and probably one of them was transported in very recent times to the region now inhabited by the other. Their distinction as races or as sub-species cannot be determined until more specimens are procured from both localities.

Epitranus ruptator.

Mas.—Rufescente piceus; caput et thorax sub-punctata, sub-nitentia; facies perobliqua; antennæ rufæ, filiformes, thorace paullò breviores; thorax breviusculus, scutello inermi; petiolus longus, gracilis, sulcatus; abdomen ellipticum, clavatum; pedes obscurè rufi, femoribus posticis dentatis; alæ sub-cinereæ.

Male.—Reddish-piceous. Head and thorax minutely punctured, slightly shining. Head hardly as broad as the thorax; face very oblique. Antennæ red, filiform, a little shorter than the thorax, inserted near the mouth. Thorax rather short, with the usual structure; scutellum unarmed. Petiole slender, linear, sulcated, about half the length of the thorax and somewhat shorter than the elliptical, slightly compressed, and very deep abdomen. Legs dull red, with the usual structure; hind-coxæ and hind-femora much incrassated, the latter armed beneath with several minute teeth. Wings slightly cinereous; veins black; ulna full half the length of the humerus; radius and cubitus extremely short.

Length of the body 3 lines; of the wings 5 lines.

Port Natal. Discovered by M. Gueinzius. In the British Museum.

Genus Chalcis.

Chalcis comitator.

Mas.—Nigra, crassa; thorax densè punctatus; antennæ sub-filiformes, thorace breviores; scutellum inerme; metathorax scaber: abdomen ovatum, acutum, thorace non longius; pedes tibiis anticis supra, tibiis posterioribus apice genubusque albis, femoribus posticis dentatis; alæ cinereæ.

Male.—Black, broad, thick, with hoary pubescence. Head and thorax thickly punctured. Head impressed in front; face

not oblique. Antennæ stout, nearly filiform, shorter than the thorax. Thorax with the usual structure, unarmed except a protuberance behind the scutellum. Metathorax largely scabrous. Petiole extremely short. Abdomen oval, acute, narrower but not longer than the thorax. Legs with the usual structure; knees and tips of the tibiæ white; fore-tibiæ white above; hind-femora much incrassated, armed beneath with several minute teeth. Wings cinereous; veins black. Fore-wings with a brownish tinge towards the base; ulna hardly half the length of the humerus; radius nearly half the length of the ulna; cubitus extremely short.

Length of the body $3\frac{1}{2}$ lines; of the wings 5 lines.

Mexico. Discovered by M. Sallé. In the British Museum.

Chalcis pendator.

Mas.—Nigra, robusta; caput et thorax sub-punctata; antennæ filiformes, thorace breviores; thorax callis pallidè flavis, scutello inermi, metathorace scabro; abdomen ellipticum, breve; pedes femoribus apice, coxis posticis subtus tarsisque flavis, tibiis flavis nigro fasciatis; alæ cinereæ.

Male.—Black, robust. Head and thorax minutely punctured. Antennæ thick, linear, shorter than the thorax. Thorax with the usual structure; scutellum unarmed; callus at the base of the fore-wings pale yellow; metathorax largely scabrous. Petiole extremely short. Abdomen elliptical, a little narrower and much shorter than the thorax. Femora with yellow tips; hind-coxæ yellow beneath; hind-femora incrassated, armed beneath with several minute teeth; tibiæ yellow, with a broad black band; tarsi yellow; fore-tarsi tawny. Wings cinereous; veins black; ulna hardly half the length of the humerus; radius shorter than the ulna; cubitus extremely short.

Length of the body 3 lines; of the wings 5 lines.

St. Domingo. Discovered by Mr. Tweedie. In the British Museum.

Chalcis restituta.

Fœm.—Nigra, crassa; caput et thorax sub-punctata; antennæ filiformes, thorace breviores; thorax callis albis, scutello bidentato, metathorace scabro; abdomen ellipticum, postice sub-attenuatum, thorace brevius; pedes rufi, femoribus apice tibiisque basi apiceque flavis; alæ cinereæ.

Female.—Black, thick. Head and thorax minutely punctured. Antennæ robust, linear, shorter than the thorax. Thorax with

the usual structure; scutellum bidentate; callus at the base of the fore-wings white; metathorax scabrous; petiole extremely short. Abdomen elliptical, slightly antenuated hindward, shorter but hardly narrower than the thorax. Legs red; femora with pale yellow tips; hind-femora much incrassated, armed beneath with many minute teeth; tibiæ pale yellow at the base and at the tips. Wings cinereous; veins black; ulna about one-third of the length of the humerus; radius less than half the length of the ulna; cubitus very short.

Length of the body 3 lines; of the wings 5 lines.

Jamaica. Discovered by Mr. Gosse. In the British Museum.

The less shining thorax, and the slightly shorter and broader abdomen are the only characters in which this species seems to differ from *C. Polyctor* (*post*, p. 354).

Chalcis implexa.

Mas.—Nigra, crassa; caput et thorax sub-scabra; antennæ sub-clavatæ, thorace breviores; thorax flavescenti pubescens, scutello inermi, metathorace scabroso; abdomen longi-ellipticum, thorace vix longius, apicem versus flavescenti pubescens; pedes femoribus posticis apice flavo strigatis, tibiis posticis supra genubusque flavis; alæ anticæ basi sub-fuscescentes.

Male.—Black, broad, thick. Head and thorax minutely scabrous. Antennæ stout, sub-clavate, shorter than the thorax. Thorax with the usual structure, thinly covered with yellowish pubescence; scutellum unarmed; metathorax very largely scabrous. Petiole extremely short. Abdomen elongate, elliptical, narrower, but hardly longer, than the thorax; apical half thickly covered with yellowish pubescence. Knees yellow. Hind-femora much incrassated with a yellow apical streak, armed beneath with several small teeth; hind-tibiæ yellow above. Wings cinereous: veins black. Fore-wings with a brownish tinge towards the base; ulna about half the length of the humerus; radius full one-third of the length of the ulna; cubitus very short.

Length of the body 4½ lines; of the wings 7½ lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Chalcis decreta.

Fœm.—Nigra; caput et thorax sub-punctata; facies perobliqua; antennæ crassæ, filiformes, thorace breviores; scutellum bidentatum; abdomen fusiforme, thorace longius, apice peracutum; pedes pallide flavi, femoribus supra coxisque nigris, tibiis posticis nigro fasciatis; alæ cinereæ.

Female.—Black. Head and thorax minutely punctured. Face very oblique. Antennæ thick, filiform, shorter than the thorax, Thorax with the usual structure; scutellum minutely bidentate. Petiole extremely short. Abdomen fusiform, slightly compressed, longer and narrower than the thorax, very acute at the tip. Legs pale yellow; coxæ black; anterior femora black above, except towards the tips; hind-coxæ yellow beneath; hind-femora black, much incrassated, yellow at the base and at the tips, armed beneath with one large, and with several small teeth; hind-tibiæ with a broad black band. Wings cinereous; veins black; ulna full half the length of the humerus; radius and cubitus very short.

Length of the body 3 lines; of the wings 5 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Chalcis separata.

Fœm.—Nigra; caput et thorax subtilissimè punctata; antennæ sub-clavatæ, scapo flavo; scutellum inerme; petiolus brevissimus; abdomen basi ovatum, apice longissimè stylatum; pedes flavi; coxis nigris, femoribus anterioribus basi piceis, femoribus posticis nigris dentatis valdè incrassatis apice flavis, tibiis posticis piceo notatis; alæ sub-cinereæ.

Female.—Black, smooth, shining. Head and thorax very minutely punctured. Antennæ sub-clavate, shorter than the thorax; scape yellow. Thorax with the usual structure; scutellum unarmed. Petiole extremely short. Abdomen with the basal part oval, a little longer than the thorax; apical part compressed, slender, stylate, of equal depth except at the base, as long as the preceding part of the body. Legs yellow; coxæ black; anterior femora piceous at the base; hind-femora black, much incrassated, yellow towards the tips, armed beneath with very minute teeth; hind-tibiæ with a piceous mark in the middle. Wings slightly cinereous; veins black; ulna more than half the length of the humerus; radius and cubitus extremely short.

Length of the body 5 lines; of the wings 5 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Chalcis concitator.

Mas.—Nigra, crassa; caput et thorax sub-punctata; antennæ filiformes, thorace paullò breviores; thorax callis flavis, scutello bidentato, metathorace scabro; abdomen ellipticum,

thorace brevius, apicem versus pubescens; pedes flavi, femoribus posticis nigris basi flavo guttatis apice flavis; alæ cinereæ.

Male.—Black, thick. Head and thorax very minutely punctured. Antennæ stout, linear, a little shorter than the thorax. Thorax with the usual structure; scutellum bidentate; calli at the base of the fore-wings pale yellow. Metathorax scabrous. Petiole extremely short. Abdomen elliptical, shorter and narrower than the thorax, pubescent hindward. Legs yellow; coxæ black; hind-femora black, much incrassated, armed beneath with minute yellow-tipped teeth, with a yellow dot at the base beneath. Wings cinereous; veins black; ulna about half the length of the humerus; radius not more than one-fourth of the length of the ulna; cubitus very short.

Length of the body $2\frac{1}{2}$ lines; of the wings 5 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Chalcis Polyctor.

Mas et *Fœm.*—Nigra, robusta; caput et thorax densè punctata, capite excavato; antennæ sub-clavatæ, thorace breviores; thorax callis albis, scutello bidentato; abdomen ellipticum; pedes albo varii, femoribus tibiisque posticis tarsisque rufis; alæ cinereæ.

Chalcis Polyctor, Walk. "The Entomologist," 218.

Male and *Female*.—Black, stout. Head and thorax thickly punctured. Head much excavated in front. Antennæ subclavate, robust, shorter than the thorax. Thorax with the usual structure; scutellum bidentate; callus at the base of the fore-wings white. Petiole extremely short. Abdomen elliptical, shorter than the thorax in the male, full as long as the thorax in the female, where it is slightly attenuated towards the acute tip. Tarsi red. Anterior femora black, with white tips; anterior tibiæ white at the base and at the tips. Hind-femora red, much incrassated, with white tips, armed beneath with several rather large teeth; hind-tibiæ red, white at the base and at the tips. Wings cinereous; veins black; ulna full half the length of the humerus in the male, less than half the length of the humerus in the female; radius and cubitus very short.

Length of the body $2\frac{1}{2}$—3 lines; of the wings 4—5 lines.

West and South Africa. In the British Museum.

The former description of this species is incomplete.

Chalcis responsator.

Mas.—Nigra; caput et thorax sub-punctata; antennæ filiformes, thorace breviores; thorax callis flavis, scutello bidentato, metathorace scabro; abdomen brevi-ellipticum; pedes flavi, femoribus anterioribus basi tibiisque posticis subtus coxisque nigris, femoribus posticis rufis, maculâ exteriore nigrâ guttâque apicali flavâ; alæ limpidæ.

Male.—Black, thick. Head and thorax minutely punctured. Antennæ thick, linear, shorter than the thorax. Thorax with the usual structure; scutellum bidentate, bordered with cinereous pubescence; calli at the base of the fore-wings pale yellow; metathorax scabrous. Petiole extremely short. Abdomen short, elliptical, very highly arched, much shorter and a little narrower than the thorax; hind part with bands of cinereous pubescence. Legs pale yellow; anterior femora towards the base and coxæ black; hind-femora red, much incrassated, with a blackish spot on the outer side and with a yellow apical dot, armed beneath with several minute teeth; hind-tibiæ black beneath. Wings limpid; veins black; ulna a little less than half the length of the humerus; radius much shorter than the ulna; cubitus very short.

Length of the body $2\frac{1}{2}$ lines; of the wings 5 lines.

North Hindostan. In the British Museum.

Chalcis inclinator.

Mas.—Nigra, crassa; caput et thorax densè punctata; antennæ filiformes, thorace breviores; thorax callis flavis, scutello bidentato, metathorace scabro; abdomen brevi-ellipticum; pedes flavi, coxis femoribusque nigris, his apice flavis; alæ cinereæ.

Male.—Black, robust. Head and thorax thickly and minutely punctured. Antennæ stout, linear, shorter than the thorax. Thorax with the usual structure; scutellum with two minute teeth; callus at the base of the fore-wings yellow; metathorax scabrous. Petiole extremely short. Abdomen short, elliptical, much shorter than the thorax. Legs yellow; coxæ and femora black; the latter with yellow tips; hind-femora much incrassated, with one large tooth near the base and with several minute teeth. Wings cinereous; veins black; ulna full half the length of the humerus; radius much less than half the length of the ulna; cubitus very short.

Length of the body 3 lines; of the wings 5 lines.

Sarawak, Borneo. Batchian. Hong Kong. Discovered by

Mr. Bowring. Aru Island. Discovered by Mr. Wallace. In the British Museum.

Chalcis sociator.

Fœm.—Nigra, crassa; caput et thorax punctata, subnitentia; antennæ sub-clavatæ, thorace breviores; thorax callis flavis, scutello inermi, metathorace scabro; abdomen ellipticum, thorace paullo brevius; pedes flavi, coxis femoribusque nigris, his apice flavis, tibiis nigro strigatis; alæ cinereæ.

Female.—Black, robust. Head and thorax punctured, slightly shining. Antennæ stout, sub-clavate, shorter than the thorax. Thorax with the usual structure; scutellum unarmed; calli at the base of the fore-wings pale yellow; metathorax scabrous. Petiole extremely short. Abdomen elliptical, a little shorter but hardly narrower than the thorax. Legs yellow; coxæ and femora black, the latter with yellow tips; tibiæ streaked above with black: hind-femora much incrassated, armed beneath with many minute teeth. Wings cinereous; veins black; ulna about half the length of the humerus; radius much less than half the length of the ulna; cubitus very short.

Length of the body 3 lines; of the wings 5 lines.

Sarawak, Borneo. Discovered by Mr. Wallace. In the British Museum.

Chalcis nitator.

Mas.—Nigra, crassa; caput et thorax subtilissimè punctata; thorax callis flavis, scutello bidentato, metathorace scabro; abdomen brevissimum, apicem versus rufescens; pedes flavi, femoribus anterioribus basi femoribusque posticis nigris, his apice flavis; alæ limpidæ.

Male.—Black, thick. Head and thorax very minutely punctured. Antennæ wanting. Thorax with the usual structure; scutellum bidentate; calli at the base of the fore-wings pale yellow; metathorax scabrous. Petiole extremely short. Abdomen very short, elliptical, very highly arched, dark red towards the tip, much shorter but hardly narrower than the thorax. Legs pale yellow; anterior femora at the base and coxæ black; hind-femora black, much incrassated, yellow at the tips, armed beneath with minute teeth. Wings limpid; veins black; ulna about half the length of the humerus; radius much shorter than the ulna; cubitus very short.

Length of the body $2\frac{1}{2}$ lines; of the wings 5 lines.

North Australia. Discovered by Mr. Elsey. In the British Museum.

Genus Halticella.

Halticella ensator.

Mas et *Fœm.*—Nigra; caput et thorax scabrosa; caput valde impressum; antennæ thorace non breviores; calli rufescenti-picei; scutellum inerme; metathorax bidentatus; petiolus brevissimus; abdomen rufescenti-piceum; femora postica incrassata, octo-dentata; alæ anticæ dimidio basali fuscescente. *Mas.*—Abdomen longi-ellipticum, thorace brevius. *Fœm.*—Abdomen thorace multo longius, apicem versus nigrum, stylatum.

Female.—Black. Head and thorax largely scabrous. Head deeply impressed in front for the reception of the scape of the antennæ; the latter hardly thicker towards their tip, as long as the thorax. Prothorax sub-quadrate, more than twice broader than long. Mesothorax with the calli at the base of the fore-wings reddish-piceous; hind border of the scutellum prominent; metathorax bidentate. Petiole very short. Abdomen much longer than the thorax; basal part elongate-oval, reddish-piceous; apical part stylate, compressed, of equal depth, shorter than the preceding part. Hind-legs of the usual form; hind-femora armed beneath with eight teeth of equal size. Wings cinereous; veins black. Fore-wings brownish from the base to the cubitus; ulna about half the length of the humerus; radius very short, longer than the cubitus.

Length of the body 7 lines; of the wings 9 lines.

Male.—Antennæ slender, filiform. Abdomen elongate-elliptical, shorter and a little narrower than the thorax.

Length of the body 4 lines.

Sarawak, Borneo. Discovered by Mr. Wallace. In the British Museum.

Halticella ducator.

Fœm.—Nigra; caput et thorax scabrosa; caput impressum, facie perobliquâ; antennæ filiformes, thorace paullo longiores; scutellum inerme; metathorax bidentatus; petiolus brevissimus; abdomen thorace multo longius, basi fusiforme rufescenti-piceum, apice nigrum stylatum; femora postica incrassata, decem-dentata; alæ cinereæ.

Female.—Black. Head and thorax scabrous. Head impressed in front; face very oblique. Antennæ filiform, a little longer than the thorax. Thorax like that of *H. ensator* in structure. Petiole very short. Abdomen very much longer than the thorax; basal

part fusiform, slightly compressed, reddish-piceous; apical part stylate, compressed, of equal breadth, a little shorter than the preceding part. Hind-legs of the usual form; hind-femora armed beneath with ten teeth of nearly equal size. Wings cinereous; veins black. Fore-wings with the ulna about half the length of the humerus; radius and cubitus very short, of equal length.

Length of the body 9 lines; of the wings 10 lines.

Amboina, Ceram. Discovered by Mr. Wallace. In the British Museum.

Halticella properator.

Fœm.—Nigra; caput et thorax scabrosa; caput impressum, facie perobliquâ; scutellum inerme; metathorax bidentatus; petiolus brevissimus; abdomen thorace valdè longius, basi longi-ellipticum, apice stylatum punctatum; tarsi picei; femora postica incrassata, septem-dentata; alæ fuscescenti-cinereæ.

Female.—Black. Head and thorax scabrous. Head and thorax in structure like those of *H. ducator* (*sup.* p. 357), but with the face more oblique. Petiole very short. Abdomen very much longer than the thorax; basal part elongate-elliptical; apical part stylate, compressed, punctured along most of the length, very slightly decreasing in depth to the tip, a little longer than the preceding part. Tarsi piceous. Hind-legs of the usual form; femora armed beneath with seven minute teeth. Wings brownish cinereous; veins black; ulna about half the length of the humerus; radius and cubitus very short.

Length of the body 5 lines; of the wings 8 lines.

Java. Discovered by Mr. Bowring. In the British Museum.

Halticella tentator.

Mas et *Fœm.*—Nigra; caput et thorax scabrosa; caput valdè impressum; antennæ filiformes; calli rufi; scutellum inerme; metathorax bidentatus; petiolus brevissimus; abdomen rufum; femora postica incrassata, dentata; alæ anticæ cinereæ, apud costam luridæ. *Mas.*—Abdomen fusiforme, thorace paullò brevius. *Fœm.*—Abdomen thorace valdè longius, basi fusiforme, apicem versus stylatum.

Female.—Black. Head and thorax largely scabrous, like those of *H. ensator* (*sup.* p. 357) in structure. Antennæ filiform; calli at the base of the fore-wings red. Petiole very short. Abdomen very much longer than the thorax; basal part fusiform, red; apical part stylate, compressed, of equal depth, much shorter than the

basal part. Hind-legs of the usual form; hind-femora armed beneath with minute teeth. Wings cinereous; veins black. Fore-wings with a lurid tinge along the costa; ulna less than half the length of the humerus; radius and cubitus very short.

Length of the body 6 lines; of the wings 9 lines.

Male.—Antennæ longer than those of the female. Abdomen red, fusiform, a little shorter than the thorax.

Length of the body 4 lines; of the wings 7 lines.

Singapore. Discovered by Mr. Wallace. In the British Museum.

Halticella signator.

Fœm.—Nigra; caput et thorax scabrosa; caput valdè impressum, facie obliquâ; antennæ filiformes, thorace non breviores; scutellum inerme; metathorax bidentatus; petiolus brevissimus; abdomen thorace multò longius, basi longi-ellipticum, apice stylatum punctatum; tarsi obscurè rufescentes; femora postica incrassata, quadridentata; alæ cinereæ, basi apud costam nigricantes.

Female.—Black. Head and thorax scabrous, in structure like those of *H. ensator* (*sup.* p. 357); face oblique. Antennæ filiform, as long as the thorax. Petiole very short. Abdomen much longer than the thorax; basal part elongate-elliptical; apical part stylate, compressed, punctured, a little deeper at the tip, much shorter than the basal part. Tarsi dark reddish. Hind-legs of the usual form; hind-femora much incrassated, armed with four large teeth. Wings cinereous, blackish along the costa towards the base; veins black; ulna about half the length of the humerus; radius and cubitus very short.

Length of the body 5½ lines; of the wings 9 lines.

Java. Discovered by Mr. Bowring. In the British Museum.

Halticella motator.

Fœm.—Nigra; caput et thorax scabrosa; caput valdè impressum, facie perobliquâ; antennæ filiformes, thorace non breviores; scutellum inerme; metathorax bidentatus; petiolus brevissimus; abdomen thorace valdè longius, basi longi-ellipticum, apice stylatum; femora postica incrassata, dentata; alæ cinereæ, dimidio basali nigricante.

Female.—Black. Head and thorax finely scabrous, in structure like those of *H. ensator* (*sup.* p. 357); face very oblique. Antennæ filiform, as long as the thorax. Petiole very short. Abdomen much longer than the thorax; basal part elongate-elliptical; apical part

stylate, compressed, very little deeper at the tip, much shorter than the preceding part. Hind-legs of the usual form; hind-femora much incrassated, their teeth successively decreasing in size towards the tips. Wings cinereous; veins black. Fore-wings blackish from the base to the cubitus; ulna more than half the length of the humerus; radius and cubitus very short. Hind-wings blackish for full two-thirds of the length from the base.

Length of the body 6 lines; of the wings 10 lines.

Sarawak, Borneo. Discovered by Mr. Wallace. In the British Museum.

Halticella gladiator.

Fœm.—Nigra, sat gracilis; caput et thorax scabrosa; caput valdè impressum, facie perobliquâ; antennæ graciles, filiformes, thorace non longiores; scutellum inerme; abdomen thorace longius, basi rufum longi-ellipticum, apice stylatum; femora postica dentata; tarsi rufi; alæ fuscescente cinereæ.

Female.—Black, rather narrow. Head and thorax largely scabrous. Head much impressed in front; face very oblique. Antennæ slender, filiform, inserted near the mouth, as long as the thorax. Thorax with the usual structure; scutellum unarmed. Petiole extremely short. Abdomen longer than the thorax; basal part elongate-elliptical; its first segment occupying more than half the surface, red towards the base; all the following segments very short, with cinereous pubescence; apical part forming a lanceolate style, full half the length of the preceding part. Tarsi and anterior knees red; hind-femora much incrassated, armed beneath with eight very minute teeth. Wings brownish-cinereous; veins black; ulna hardly one-third of the length of the humerus; radius extremely short; cubitus very little longer than the radius.

Length of the body 4 lines; of the wings 6 lines.

Sarawak, Borneo. Discovered by Mr. Wallace. In the British Museum.

Halticella declarator.

Mas.—Nigra, crassa; caput et thorax scabra; caput impressum, facie sub-obliquâ; antennæ graciles, filiformes, thorace longiores; scutellum inerme; abdomen ellipticum, thorace non longius; femora postica dentata; alæ cinereæ, dimidio basali nigricante fusco.

Male.—Black. Head and thorax scabrous. Head impressed in front; face slightly oblique. Antennæ slender, filiform, longer than the thorax, red for full one-third of the length from the tips. Thorax pubescent, with the usual structure, unarmed, with the

exception of a protuberance behind the scutellum. Petiole extremely short. Abdomen elliptical, not longer than the thorax. Hind-legs with the usual structure; femora much incrassated, armed beneath with several small teeth. Wings cinereous, blackish-brown for half the length from the base; veins black; ulna full half the length of the humerus; radius and cubitus very short.

Length of the body 5 lines; of the wings 8 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Halticella basalis.

Fœm.—Nigra; caput et thorax scabrosa; caput impressum, facie obliquâ; antennæ apices versus sub-crassiores; scutellum inerme; metathorax bidentatus; petiolus brevissimus; abdomen thorace multò longius, basi rufescens longi-ovatum, apice stylatum; tarsi rufi; femora postica incrassata, sex-dentata; alæ cinereæ.

Female.—Black. Head and thorax largely scabrous. Front impressed as usual; face oblique. Antennæ a little thicker towards the tips. Thorax with the usual structure. Petiole very short. Abdomen much longer than the thorax; basal part elongate-oval, dark red towards the petiole, with hoary pubescence on the hind borders of the segments on each side; apical part compressed, stylate, hardly deeper at the tip, much shorter than the basal part. Tarsi red. Hind-legs of the usual form; hind-femora incrassated, armed beneath with six moderate-sized teeth. Wings cinereous; veins black; ulna less than half the length of the humerus; radius and cubitus very short.

Length of the body 4—5 lines; of the wings 6—8 lines.

Para. Discovered by Mr. Bates. In the British Museum.

Halticella liberator.

Fœm.—Nigra; caput et thorax subtilissimè punctata; caput valdè impressum, facie perobliquâ; antennæ graciles, filiformes, thorace paullò longiores; scutellum bispinosum; petiolus brevissimus; abdomen thorace vix longius, basi ovatum, apice stylatum; femora postica valdè incrassata, non dentata; alæ anticæ fasciis duabus abbreviatis nigricantibus.

Female.—Black. Head and thorax very minutely punctured. Head deeply impressed in front; face very oblique. Antennæ slender, filiform, seated near the mouth, a little longer than the thorax. Thorax of the usual structure; scutellum armed with two short ascending spines. Petiole extremely short. Abdomen

oval, hardly longer than the thorax; 2nd segment about half the length of the 1st; 3rd segment less than half the length of the 2nd; the following segments extremely short; apical part forming a compressed lanceolate style, about one-fourth of the length of the preceding part. Hind-femora much incrassated, slightly notched but not dentate beneath; hind-tibiæ curved, compressed, slightly dilated. Wings cinereous. Fore-wings with two blackish, hindward-shortened bands; the 2nd full twice the breadth of the 1st; veins black; ulna about one-fourth of the length of the humerus; radius and cubitus nearly obsolete.

Length of the body 4 lines; of the wings 5 lines.

Port Natal. Discovered by M. Gueinzius. In the British Museum.

Halticella proctotuperator.

Fœm.—Nigra; caput et thorax scabrosa; caput valdè impressum, facie perobliquâ; antennæ sub-filiformes, thorace non longiores; thorax callis rufis, scutello inermi; abdomen rufescente-nigrum, basi longi-ovatum, apice stylatum; femora postica dentata; tarsi rufi; alæ cinereæ, apud medium sub-fuscescentes.

Female.—Black, with cinereous tomentum. Head and thorax scabrous. Head deeply impressed; face very oblique. Antennæ robust, almost filiform, not longer than the thorax. Calli at the base of the fore-wings red. Scutellum unarmed. Petiole very short. Abdomen reddish-black, much longer than the thorax, elongate-oval, with the exception of the apical part; the latter stylate, compressed, of equal depth, much shorter than the preceding part. Hind-femora much incrassated, armed beneath with minute teeth. Tarsi red. Wings cinereous, with a brown tinge about the middle; veins black; ulna about half the length of the humerus; radius and cubitus very short.

Length of the body 5 lines; of the wings 7 lines.

This species is closely allied to *H. tentator* (*ante*, p. 358), but may be distinguished by the shorter stylate part of the abdomen.

Singapore. Discovered by Mr. Wallace. In the collection of Mr. Saunders.

Halticella lanceolator.

Fœm.—Nigra, sat gracilis; caput et thorax scabra; caput valdè impressum, facie perobliquâ; antennæ filiformes, sat graciles, thorace non longiores; thorax callis nigris, scutello inermi; abdomen basi rufum longi-ovatum, apice stylatum; femora postica dentata; tarsi rufi; alæ fuscescente cinereæ.

Female.—Black, rather slender. Head and thorax scabrous. Head deeply impressed; face very oblique. Antennæ filiform, rather slender, not longer than the thorax. Thorax with black calli at the base of the fore-wings; scutellum prominent, unarmed. Petiole very short. Abdomen red towards the base, very much longer than the thorax, elongate-oval with the exception of the stylate part; the latter compressed, of nearly equal depth, nearly as long as the preceding part. Hind-femora much incrassated, armed beneath with several teeth of moderate size. Tarsi red. Wings brownish-cinereous; veins black; ulna full half the length of the humerus; radius and cubitus very short.

Length of the body 4 lines; of the wings 6 lines.

Aru, Batchian, and Kaisan. Discovered by Mr. Wallace. In the collection of Mr. Saunders.

Halticella minator.

Mas.—Nigra, sat gracilis; caput et thorax sub-punctata; caput valdè impressum, facie perobliquâ; antennæ robustæ, filiformes, thorace non breviores; scutellum bidentatum; metathorax scaber; abdomen ellipticum, thorace brevius; femora postica non dentata; alæ cinereæ.

Male.—Black, rather slender. Head and thorax minutely punctured. Head much impressed in front; face very oblique. Antennæ stout, linear, inserted by the mouth, full as long as the thorax. Thorax with the usual structure; scutellum bidentate; metathorax scabrous. Petiole extremely short. Abdomen elliptical, slightly convex, shorter and a little narrower than the thorax. Legs wholly black; hind-femora incrassated, unarmed. Wings cinereous; veins black; ulna about one-fifth of the length of the humerus; radius and cubitus extremely short.

Length of the body $2\frac{1}{2}$ lines; of the wings 4 lines.

Port Natal. Discovered by M. Gueinzius. In the British Museum.

Halticella versator.

Fœm.—Nigra, gracilis, subtus rufescens; caput et thorax scabrosa; facies perobliqua; antennæ graciles, filiformes, thorace non longiores; thorax rufo varius, scutello inermi; petiolus brevissimus; abdomen thorace paullò longius, basi fusiforme, apice rufum lanceolatum; pedes rufi, femoribus nigris rufo variis, femoribus posticis incrassatis dentatis; alæ cinereæ.

Female.—Black, slender and but slightly convex with regard to

the tribe, mostly dark red beneath. Head and thorax roughly scabrous; face very oblique. Antennæ slender, filiform, not longer than the thorax. Thorax with the usual structure, red in front; scutellum unarmed. Petiole extremely short. Abdomen with the basal part fusiform, a little narrower and longer than the thorax; apical part red, slender, lanceolate, about half the length of the preceding part. Legs red; femora mostly black; hind-femora much incrassated, armed beneath with several rather large teeth. Wings cinereous; veins black; ulna less than half the length of the humerus; radius and cubitus very short.

Length of the body $3\frac{1}{2}$ lines; of the wings $4\frac{1}{2}$ lines.

South Africa. In the British Museum.

Halticella spinator.

Fœm.—Nigra, crassa; caput et thorax densissimè punctata; caput valdè impressum, facie perobliquâ; antennæ filiformes, thorace multò breviores; scutellum peracutum, valdè productum; metathorax scaber; abdomen ovatum, peracutum, thorace paullò brevius; femora postica non dentata; alæ anticæ obscurè cinereæ, liturâ apud costam nigricante.

Female.—Black, robust, with cinereous tomentum. Head and thorax very thickly punctured. Head very deeply impressed; face extremely oblique. Antennæ filiform, inserted near the mouth, much shorter than the thorax. Scutellum prolonged into a stout very acute spine, extending over the basal part of the abdomen. Metathorax scabrous. Petiole extremely short. Abdomen oval, very acute, a little narrower and shorter than the thorax. Hind-femora incrassated, not dentate; hind-tibiæ curved, slightly dilated. Wings dark cinereous; veins black. Fore-wings with a blackish mark by the ulna; the latter less than one-fourth of the length of the humerus; radius very slender, a little longer than the ulna; cubitus extremely short.

Length of the body 4 lines; of the wings 7 lines.

Singapore. Discovered by Mr. Wallace. In Mr. Saunders' collection.

Halticella æquator.

Fœm.—Nigra; caput et thorax scitissimè punctata; caput valdè impressum, facie perobliquâ; antennæ filiformes, thorace paullò breviores; scutellum bidentatum; metathorax scaber; abdomen fusiforme, thorace non longius; femora postica non dentata; alæ obscurè cinereæ.

Female.—Black. Head and thorax very finely punctured.

Head very deeply impressed; face extremely oblique. Antennæ filiform, inserted by the mouth, a little shorter than the thorax. Scutellum prominent, bidentate. Metathorax scabrous. Petiole extremely short. Abdomen fusiform, acute, hardly compressed, with cinereous tomentum towards the tip, a little narrower but not longer than the thorax. Hind-femora incrassated, not dentate; hind-tibiæ slightly dilated and curved. Wings dark cinereous; veins black; ulna not more than one-sixth of the length of the humerus; radius and cubitus very short.

Length of the body 3 lines; of the wings $4\frac{1}{3}$ lines.

Makessar, Celebes. Discovered by Mr. Wallace. In Mr. Saunders' collection.

Halticella moderator.

Fœm.—Nigra, sat gracilis; caput et thorax subtilissimè punctata; caput impressum, facie perobliquâ; antennæ graciles, sub-clavatæ, thorace ferè breviores; scutellum inerme; abdomen longi-ovatum, subtus apiceque rufum, thorace non longius; pedes rufi, femoribus posticis nigris dentatis; alæ cinereæ.

Female.—Black, rather narrow. Head and thorax very minutely punctured. Head impressed in front; face very oblique. Antennæ slender, sub-clavate, inserted near the mouth, hardly as long as the thorax. Thorax with the usual structure; scutellum unarmed; metathorax hardly oblique. Petiole extremely short. Abdomen elongate-oval, not longer than the thorax, red beneath and at the tip, which is acute and slightly ascending. Legs red; coxæ and hind-femora black, the latter much incrassated, armed beneath with several minute teeth. Wings cinereous; veins black; ulna not more than one-third of the length of the humerus; radius and cubitus extremely short.

Length of the body $2\frac{1}{2}$ lines; of the wings 4 lines.

Algeria. In the British Museum.

Halticella fabricator.

Fœm.—Nigra; caput et thorax subtilissimè punctata; caput valdè impressum; antennæ graciles, filiformes, thorace non longiores; thorax callis rufis, scutello inermi; abdomen longi-ovatum, subtus rufum, apice attenuatum, thorace paullò longius; pedes rufi, femoribus posticis unidentatis; alæ cinereæ, breves.

Female.—Black. Head and thorax very minutely punctured. Head much impressed in front. Antennæ slender, filiform, in-

serted by the mouth, not longer than the thorax. Thorax with the usual structure; scutellum unarmed; calli at the base of the fore-wings red. Petiole extremely short. Abdomen elongate-oval, attenuated towards the acute tip, red beneath, a little longer and narrower than the thorax; first segment occupying about half the surface; the following segments much narrower above than on each side. Legs red, of the usual structure; hind-femora incrassated, with a very obtuse tooth near the tip beneath. Wings cinereous, short; veins black. Fore-wings clouded with brown in the disk; ulna hardly one-fourth of the length of the humerus; radius obsolete; cubitus very short.

Length of the body $2\frac{1}{2}$ lines; of the wings 3 lines.

Adelaide. In the British Museum.

Halticella simplex.

Fœm.—Nigra, sat gracilis; caput et thorax subtilissimè punctata; caput impressum, facie perobliquâ; antennæ graciles, sub-clavatæ, thorace vix breviores; scutellum inerme; abdomen longi-ovatum, subtus apiceque rufum, thorace non longius; pedes rufi, femoribus posticis nigris, dentatis; alæ cinereæ.

Female.—Black, very closely allied to *H. fabricator* (*sup.* p. 365). Head and thorax very minutely punctured. Head much impressed in front. Antennæ red, slender, filiform, inserted by the mouth, not longer than the thorax, blackish in the middle part. Thorax with the usual structure; scutellum unarmed; calli at the base of the fore-wings red. Petiole extremely short. Abdomen elongate-oval, attenuated towards the acute tip, red beneath and at the tip, a little longer and narrower than the thorax. Legs red, of the usual structure; femora mostly black; hind-femora incrassated, with a very obtuse tooth near the base beneath. Wings cinereous, short; veins black. Fore-wings slightly clouded with brown in the disk; ulna hardly one-fourth of the length of the humerus; radius obsolete; cubitus extremely short.

Length of the body $2\frac{3}{4}$ lines; of the wings $3\frac{1}{2}$ lines.

Sierra Leone. Discovered by Mr. Foxcroft. In the British Museum.

Halticella dubitator.

Fœm.—Nigra, sat gracilis; caput et thorax subtilissimè punctata; caput thorace paullò latius, facie perobliquâ; antennæ clavatæ, thorace paullò longiores; scutellum valdè productum, apice acutum; abdomen fusiforme, thorace non longius;

pedes rufi, femoribus posticis nigris, non dentatis; alæ anticæ cinereæ, guttâ costali fuscescente.

Female.—Black, rather slender. Head and thorax very minutely punctured. Head a little broader than the thorax; face very oblique. Antennæ stout, clavate, a little longer than the thorax. Scutellum produced into a spine and extending over the metathorax. Petiole extremely short and stout, so that the abdomen appears to be subsessile. Abdomen fusiform, more slender, but not longer than the thorax. Legs red; hind-femora black, incrassated, not armed; hind-tibiæ robust, hardly curved. Wings cinereous; veins black. Fore-wings with a diffuse brownish dot adjoining the ulna; ulna not one-fourth of the length of the humerus; radius and cubitus extremely short.

Length of the body $2\frac{1}{2}$ lines; of the wings $3\frac{1}{2}$ lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Halticella remotor.

Fœm.—Nigra; caput et thorax subtilissimè punctata; caput valdè excavatum, facie perobliquâ; antennæ filiformes, thorace vix longiores; scutellum productum, bifurcatum; metathorax scaber; abdomen fusiforme, apice attenuatum peracutum, thorace vix longius; femora postica non dentata; alæ cinereæ, nigricante nebulosæ.

Female.—Black. Head and thorax very minutely punctured, the former and the sutures of the latter with silvery-whitish tomentum. Head very deeply excavated; face extremely oblique. Antennæ linear, hardly longer than the thorax. Thorax with the usual structure; scutellum produced into a bifurcate spine, whose upper division is longer than the lower one; metathorax scabrous. Petiole extremely short. Abdomen fusiform, attenuated towards the very acute tip, narrower but hardly longer than the thorax. Hind-femora incrassated, unarmed; hind tibiæ slightly curved and dilated. Wings cinereous, clouded with blackish-cinereous; veins black. Fore-wings with a quadrate black spot adjoining the ulna; the latter about one-fifth of the length of the humerus; radius and cubitus obsolete.

Length of the body $3\frac{1}{2}$ lines; of the wings 6 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Halticella figurator.

Mas.—Nigra, sat gracilis; caput et thorax subtilissimè punctata; caput valdè impressum, facie perobliquâ; antennæ

filiformes, thorace paullò breviores; scutellum productum, acutum; metathorax scaber; abdomen ellipticum, thorace multò brevius; femora postica non dentata; alæ cinereæ.

Male.—Black, comparatively slender. Head and thorax very minutely punctured. Head much impressed in front; face very oblique. Antennæ linear, inserted by the mouth, a little shorter than the thorax. Thorax with the usual structure; scutellum produced into a short spine; metathorax scabrous. Petiole very short. Abdomen elliptical, a little narrower and much shorter than the thorax. Legs wholly black; hind-femora much incrassated, unarmed. Wings cinereous; veins black; ulna less than one-fourth of the length of the humerus; radius obsolete; cubitus extremely short.

Length of the body $1\frac{1}{2}$ line; of the wings 2 lines.

Gambia. Discovered by Mr. Mackenzie Skues. In the British Museum.

Halticella sulcator.

Fœm.—Nigra, sat gracilis; caput et thorax subtilissimè punctata; caput non impressum, facie perobliquâ; antennæ filiformes, thorace paullò longiores; scutellum inerme; metathorax brevissimus; abdomen fusiforme, thorace paullò longius; femora postica non dentata; alæ anticæ cinereæ, nigricante bifasciatæ.

Female.—Black, comparatively slender. Head and thorax very minutely punctured. Head not impressed in front; face very oblique. Antennæ linear, inserted by the mouth, a little longer than the thorax. Thorax with the usual structure; scutellum not produced nor armed; metathorax very short. Petiole extremely short. Abdomen fusiform, a little longer but not narrower than the thorax. Legs wholly black; hind-femora incrassated, unarmed. Wings cinereous; veins black. Fore-wings with two blackish bands; ulna about one-fourth of the length of the humerus; radius obsolete; cubitus extremely short.

Length of the body $1\frac{3}{4}$ line; of the wings 2 lines.

China. Discovered by Mr. Laye. In the British Museum.

Halticella finator.

Fœm.—Nigra; caput et thorax scabrosa; caput valdè impressum, facie perobliquâ; antennæ clavatæ, thorace breviores; thoracis calli flavescenti-albi; scutellum inerme; petiolus brevissimus; abdomen longi-ovatum, thorace vix longius, apice acutum; pedes rufi, tarsis flavescenti-albis,

coxis femoribusque anterioribus nigris, his apice flavescenti-albis, tibiis basi flavescenti-albis, femoribus posticis incrassatis, dentatis, apice flavescenti-albis ; alæ cinereæ.

Female.—Black. Head and thorax largely scabrous. Head deeply impressed in front ; face very oblique. Antennæ clavate, shorter than the thorax. Thorax with the usual structure ; scutellum unarmed, with a sharply defined edge ; callus at the base of the fore-wings yellowish-white. Petiole extremely short. Abdomen elongate-oval, a little narrower but hardly longer than the thorax, somewhat attenuated towards the tip, which is acute. Legs red ; tarsi yellowish-white. Anterior legs with black coxæ and femora, the latter yellowish-white towards the tips, fore-tibiæ yellowish-white at the base ; middle tibiæ black, yellowish-white at the base and at the tips. Hind-femora much incrassated, with yellowish-white tips, armed beneath with many very minute teeth ; hind-tibiæ piceous, with yellowish-white tips and with a dot of the same hue at the base. Wings cinereous ; veins black ; ulna about half the length of the humerus ; cubitus and radius very short.

Length of the body $2\frac{1}{2}$ lines ; of the wings 4 lines.

Hong Kong. Discovered by Mr. Bowring. In the British Museum.

Halticella indignator.

Fœm.—Nigra, crassa ; caput et thorax subtilè punctata ; antennæ robustæ, thorace breviores ; scutellum inerme ; metathorax scaber ; abdomen ovatum, thorace brevius ; pedes rufi, femoribus anterioribus nigris apice rufis, femoribus posticis dentatis ; alæ cinereæ.

Female.—Black. Head and thorax minutely punctured. Antennæ robust, shorter than the thorax. Thorax with the usual structure ; scutellum unarmed ; metathorax scabrous. Petiole extremely short. Abdomen oval, shorter than the thorax. Legs red ; coxæ and anterior femora black ; the latter with red tips ; hind-femora much incrassated, armed beneath with several minute teeth. Wings cinereous ; veins black ; ulna less than half the length of the humerus ; radius and cubitus very short.

Length of the body 2 lines ; of the wings 4 lines.

Tasmania. Discovered by Mr. A. J. Smith. In the British Museum.

Halticella internata.

Mas.—Nigra ; caput et thorax subtilè punctata ; caput valdè impressum, facie perobliquâ ; antennæ subclavatæ, thorace paullò breviores ; scutellum inerme ; metathorax scaber ;

abdomen ellipticum, thorace multò brevius; pedes femoribus posticis dentatis, genubus tarsisque pallidè rufescentibus; alæ cinereæ.

Male.—Black. Head and thorax minutely punctured. Head much impressed in front; face very oblique. Antennæ stout, sub-clavate, inserted near the mouth, a little shorter than the thorax. Thorax with the usual structure; scutellum unarmed; metathorax scabrous. Petiole extremely short. Abdomen elliptical, narrower and much shorter than the thorax. Knees and tarsi pale-reddish; hind-femora armed beneath with some minute teeth. Wings cinereous; veins black; ulna about half the length of the humerus; radius and cubitus very short, the former a little longer than the latter.

Length of the body $1\frac{2}{3}$ line; of the wings $3\frac{1}{3}$ lines.

Tasmania. Discovered by Mr. A. J. Smith. In the British Museum.

Sect. II.

Genus Sosxetra.

Fœm.—Corpus sat robustum. Caput et thorax punctata, subpubescentia. Caput brevissimum, thoracis latitudine; facies striata, sub-depressa. Mandibulæ dentatæ. Palpi breves. Antennæ 9-articulatæ, filiformes, fronte insertæ; articulus 1us subclavatus, subcompressus; 2us brevissimus; 3us et sequentes lineares, subæquales; 9us apice conicus. Prothorax subquadratus, transversus. Mesothorax brevis; parapsidum suturæ conspicuæ; paraptera et epimera magna; scutellum vix bidentatum. Metathorax bene determinatus. Abdomen læve, valdè compressum, thorace non longius; segmenta antice contracta. Pedes læves, simplices, breviusculi; femora et tibiæ compressa, subdilatata; tibiæ intermediæ valdè dilatatæ. Alæ anticæ latæ, non longæ.

Female.—Body moderately stout. Head and thorax punctured, slightly pubescent. Head vertical, very short, as broad as the thorax; face slightly depressed, with striæ converging towards the mouth; mandibles dentate; palpi short. Antennæ filiform, 9-jointed, seated on the front, less than twice the length of the breadth of the head; scape slightly clavate and compressed, with a minute globular protuberance on the underside near its tip; 2nd joint very short; flagellum pubescent, slightly tapering, composed of seven linear joints, which are nearly equal in length; 9th conical at the tip. Thorax convex. Prothorax sub-quadrate, more than twice broader than long. Mesothorax short; sutures of the parapsides distinct; paraptera and epimera large; scutel-

lum very minutely bidentate. Metathorax nearly vertical, well developed. Abdomen smooth, much compressed, not longer than the thorax, in structure like that of *Cynips;* segments contracted towards the fore-part of the dorsum. Legs smooth, simple, rather short; femora and tibiæ compressed, unarmed, slightly dilated; middle tibiæ much dilated exteriorly; joints of the tarsi successively decreasing in length to the 5th; ungues and onychia very small. Fore-wings broad, not long; humerus extending at some distance from the costa; ulna about one-fifth of the length of the humerus; radius about twice the length of the ulna; cubitus somewhat shorter than the ulna.

This is a very remarkable genus. It partakes of the characters of the *Chalcidites* and of the *Cynipites*, and seems to differ from them both as much as they do from each other. It agrees with the *Chalcidites* in the structure of the wing-veins, and may be considered as the type of a new family of that tribe.

Sosxetra transversa.

Fœm.—Flavescente fulva; caput nigrum, lituris anticis flavis; prothorax lineis duabus transversis nigris, 1a interrupta, 2a abbreviata; scuto linea nigra; tibiæ posteriores ex parte nigricantes; alæ cinereæ, venis fulvis lurido marginatis.

Female.—Yellowish tawny. Head black, yellowish about the base of the antennæ and about the eyes in front and towards the mouth. Prothorax with two transverse black lines; the 1st widely interrupted, the 2nd on the hind border, abbreviated on each side. Scutum with a longitudinal black line. Middle tibiæ blackish at the tips; hind-tibiæ blackish except at the base. Wings cinereous. Fore-wings with a lurid tinge about the veins, which are tawny.

Length of the body 4 lines; of the wings 7 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Genus Smiera.

Smiera transitiva.

Fœm.—Lutea; thoracis discus niger luteo fasciatus et bimaculatus; scutellum bidentatum; metathorax niger; abdomen nigrum, basi fulvum, thorace brevius; femora postica nigro trimaculata; alæ obscure cinereæ.

Female.—Luteous. Head black about the ocelli. Thorax with a dilated black line; scutum with two luteous spots and a hindward transverse luteous line; scutellum bidentate. Metathorax black, roughly punctured. Petiole tawny, nearly half the

length of the abdomen. Abdomen black, acutely conical, tawny at the base, much shorter and very much narrower than the thorax. Hind-coxæ black towards the tips; hind-femora much incrassated, with three black spots, armed with four large black teeth. Wings dark cinereous; veins black; ulna full half the length of the humerus, a little longer than the radius.

Length of the body 3 lines; of the wings 6 lines.

East Florida. Discovered by Mr. Doubleday. In the British Museum.

Genus Epitranus.

Epitranus formicarius.

Fœm.—Rufescens, sat gracilis; antennæ filiformes, nigræ, graciles, basi fulvæ; parapsidum suturæ distinctissimæ; petiolus sex-carinatus; abdomen nigrum, breve; alæ angustæ, hyalinæ.

Female.—Reddish, rather slender. Head and thorax thinly and minutely punctured. Head as broad as the thorax; disk of the face smooth, with a slight furrow. Antennæ slender, black, filiform, tawny towards the base, shorter than the thorax, seated on a protuberance close to the mouth; scape not very much shorter than the flagellum. Thorax elongate, well developed; sutures of the parapsides very distinct. Metathorax very large. Petiole long, with six ridges. Abdomen black, shining, fusiform, very much shorter than the thorax. Hind-femora much incrassated, armed with numerous very minute teeth. Wings narrow, limpid; veins tawny; ulna full half the length of the humerus; radius almost obsolete; stigma black, minute.

Length of the body 2 lines; of the wings 3 lines.

This species indicates the close affinity between the *Chalcidæ* and the *Spalangiidæ*.

Port Natal. Discovered by Mr. Plant. In the British Museum.

Genus Chalcis.

Chalcis microlinea.

Fœm.—Nigra, brevis, robusta; antennæ flagello lineari; calli humerales flavi; abdomen ovatum, acutum, thorace vix longius: pedes flavi, femoribus nigris, tibiis nigro notatis; alæ sub-cinereæ.

Female.—Black, short, stout. Head and thorax minutely punctured. Head not so broad as the thorax. Antennæ shorter than the thorax, with a compact linear flagellum. Thorax and abdomen of the usual structure. Thorax with a yellow callus at the base of each fore-wing. Abdomen oval, acute, pubescent

hindward, hardly longer than the thorax. Legs yellow; coxæ and femora black, the latter with yellow tips; anterior tibiæ marked with black; hind-tibiæ with a broad black band; ungues and pulvilli black. Wings slightly cinereous; veins black; ulna about half the length of the humerus, nearly twice the length of the radius.

Length of the body $2\frac{1}{2}$ lines; of the wings 4 lines.

Port Natal. Discovered by Mr. Plant. In the British Museum.

Genus Agamerion, Halliday.

Agamerion Gelo.

Fœm.—Lætè viride, cyaneo et purpureo varium; abdomen cupreum, longi-ovatum, acutum, basi aureo-viride; tarsi anteriores obscure fulvi; alæ fuscescente cinereæ.

Agamerion Gelo, Walk. (List Chal. Brit. Mus.)

Female.—Bright green, varied with blue and with purple. Head and thorax extremely minutely and closely punctured. Head as broad as the thorax. Prothorax well developed. Sutures of the parapsides very indistinct; scutellum large. Metathorax short. Petiole extremely short. Abdomen smooth, elongate-oval, acute, bright cupreous, golden green at the base, convex above, keeled beneath, a little shorter and narrower than the thorax. Hind-coxæ and hind-femora incrassated; hind-tibiæ curved, beset with short bristles; anterior tarsi dark tawny; hind-tarsi black. Wings brownish cinereous; veins black; ulna much shorter than the humerus, much longer than the radius; cubitus rather long; stigma very small.

Length of the body $3\frac{1}{2}$ lines; of the wings 5 lines.

Adelaide. In the British Museum.

The previous description of this species is incomplete.

Genus Axima.

Fœm.—Corpus elongatum. Caput et thorax scabra. Caput brevissimum, antice bidentatum, thorace latius. Oculi fere petiolati. Antennæ filiformes, 13-articulatæ, thorace non longiores; articulus 1us gracilis; 2us brevis; clava longi-conica. Thorax sub-gibbosus. Prothorax sub-quadratus. Scutum breve; parapsidum suturæ indistinctæ; scutellum carinatum. Metathorax magnus, declivis. Petiolus longus, linearis, tricarinatus. Abdomen lanceolatum, compressum, glabrum, thorace longius; segmenta 1um, 2um et 3um brevia;

4um longum; 5um longissimum. Oviductus subexsertus. Pedes breves, graciles, inermes. Alæ sat angustæ.

Female.—Body elongate. Head and thorax scabrous, or largely punctured. Head very short, broader than the thorax; face very obliquely retracted; an acute and prominent tooth on each side of the front by the eye. Eyes very prominent, nearly petiolated. Antennæ filiform, 13-jointed, minutely pubescent, inserted at some distance from the mouth, not longer than the thorax; scape slender; 2nd joint short, 3rd and 4th extremely minute; the following joints to the 10th successively decreasing in length; club compact, elongate-conical. Thorax slightly gibbous. Prothorax sub-quadrate, transverse, well developed. Scutum short; sutures of the parapsides indistinct; scutellum highly arched, keeled. Metathorax declining, much developed. Petiole linear, smooth, tricarinate, as long as the metathorax. Abdomen compressed, smooth, lanceolate, slightly pubescent on each side, longer than the thorax and less than half its breadth; 1st, 2nd and 3rd segments short; 4th long; 5th very long; 6th less than half the length of the 5th, shorter than the 7th. Oviduct extending a little beyond the tip. Legs short, slender, unarmed. Wings rather narrow, minutely and thickly pubescent; ulna about half the length of the humerus, more than twice the length of the radius.

The structure of this genus is very peculiar. It associates with the *Chalcidæ* more than with any other family, and has some resemblance to *Dirhinus*, but the hind-femora and the hind-tibiæ are quite straight and slender, and thus the especially peculiar character of the *Chalcidæ* quite disappears in it. It has some affinities with the *Eurytomidæ*, others with the *Eucharidæ*, and others with some exotic genera which connect the *Pteromalidæ* with the *Cleonymidæ*.

Axima spinifrons.

Fœm.—Nigra; femora anteriora rufa; tibiæ anticæ rufæ, apices versus nigræ; tarsi anteriores rufescentes; alæ vitreæ, fascia basali lata nigricante.

Female.—Black. Anterior femora red; fore-tibiæ red, black towards the tips; anterior tarsi reddish. Wings limpid, with a broad blackish band near the base; this band does not extend far from the costa of the hind-wings; veins black.

Length of the body 4 lines; of the wings 8 lines.

St. Paul. Discovered by Mr. Bates. In the British Museum.

Genus Eurytoma.

Eurytoma capensis.

Mas.—Nigra, robusta, scite punctata; petiolus brevis; abdomen glabrum, thorace multò brevius; tibiæ tarsique fulva; alæ limpidæ, venis fuscis.

Male.—Black, stout. Head and thorax minutely punctured. Petiole short. Abdomen smooth, much shorter than the thorax. Tibiæ and tarsi tawny. Wings limpid; veins brown; ulna thick, less than one-fourth of the length of the humerus; radius not longer than the cubitus.

Length of the body $1\frac{1}{2}$ line; of the wings 3 lines.

Port Natal. Discovered by Mr. Plant. In the British Museum.

Genus Perilampus.

Perilampus gloriosus.

Mas.—Splendide smaragdinus; facies aureo-viridis; antennæ nigræ; scutellum productum, carinatum, acutum, aureo-cupreum; abdomen rufo-cupreum; tarsi fulvi; alæ nigricante cinereæ.

Male.—Brilliant emerald green. Head not broader than the thorax, minutely striated longitudinally; face golden-green, minutely punctured, with æneous pubescence; hind border dark cupreous. Antennæ black; scape bright green. Thorax largely punctured; scutum in front and sutures of the parapsides dark cupreous; scutellum prolonged into a long, keeled, golden-cupreous spine. Abdomen brilliant red-cupreous, smooth, a little broader and very much shorter than the thorax. Tarsi tawny. Wings blackish-cinereous; veins black; ulna hardly one-fourth of the length of the humerus, less than half the length of the radius; cubitus moderately long, abruptly descending; stigma extremely small.

Length of the body 4 lines; of the wings 7 lines.

Mexico. Discovered by M. Sallé. In the British Museum.

This and the following species differ sufficiently from the European *Perilampi* to be considered as the types of two new genera, but as the *Perilampi* are very few in number it is hardly necessary to separate them.

Perilampus discolor.

Mas.—Niger; caput parvum, thorace angustius; thorax fulvo bivittatus; parapsidum suturæ obsoletæ; scutellum bidentatum; tarsi fulvi; alæ nigricante cinereæ.

Male.—Black. Head and thorax rather largely and thickly

punctured. Head small, not near so broad as the thorax. Antennæ thick, shorter than the breadth of the head. Thorax with a tawny stripe along each side. Prothorax extremely short. Scutum very broad; sutures of the parapsides quite obsolete: scutellum bidentate at the tip. Abdomen smooth, much shorter but not broader than the thorax. Knees and tarsi tawny. Wings blackish-cinereous, cinereous towards the base; veins black; ulna thick, about one-third of the length of the humerus, more than twice the length of the radius; cubitus very short; stigma furcate.

Length of the body 2½ lines; of the wings 4 lines.

Port Natal. Discovered by Mr. Plant. In the British Museum.

Genus Eucharis.

Eucharis smaragdina.

Mas.—Aureo-viridis; antennæ nigræ, setaceæ, basi rufescentes; thorax gibbosus; prothorax brevissimus; parapsidum suturæ indistinctæ; metathorax bene determinatus; petiolus cupreus, gracillimus, thorace vix brevior; abdomen cupreum, parvum, longi-ovatum; pedes rufescentes; alæ fuscescente cinereæ.

Male.—Golden green. Head very short, thinly and minutely punctured, narrower than the thorax. Antennæ black, setaceous, much longer than the thorax; scape reddish, very short. Thorax rather gibbous, largely punctured. Prothorax extremely short. Scutum with an indistinct longitudinal furrow; sutures of the parapsides indistinct; scutellum prominent and vertical hindward. Metathorax well developed. Petiole cupreous, linear, very slender, nearly as long as the abdomen. Abdomen smooth, cupreous, compressed, elongate oval, keeled beneath, much shorter than the thorax and not half its breadth, forming a slightly obtuse angle with the petiole. Legs reddish; coxæ green. Wings brownish-cinereous; veins black; ulna as long as the humerus, nearly twice the length of the radius; cubitus extremely short.

Length of the body 4½ lines; of the wings 8 lines.

Tasmania. Discovered by Mr. Allport. In the British Museum.

Eucharis piceicornis.

Mas.—Obscure viridis, cupreo varia; antennæ piceæ, setaceæ, basi rufescentes; petiolus cupreus, longissimus, abdomine paullò longior; abdomen cupreum, altum, breve; pedes rufescentes; alæ angustæ, fuscescente cinereæ.

Male.—Dark green, varied with cupreous, in structure like the preceding species. Antennæ piceous, setaceous, much longer than the thorax; scape reddish. Petiole cupreous, linear, very

slender, a little longer than the abdomen. Abdomen cupreous, smooth, compressed, high, triangular when viewed laterally, about half the breadth of the thorax and little more than half its length, forming a slightly obtuse angle with the petiole. Legs reddish; coxæ cupreous. Wings brownish cinereous, narrow; veins black; ulna much shorter than the humerus, much longer than the radius; cubitus extremely short.

Length of the body 4 lines; of the wings 7 lines.

Sydney. Discovered by Mr. Stutchbury. In the British Museum.

Eucharis delicatula.

Mas.—Cyaneo-viridis; antennæ nigræ, setaceæ, basi pallide flavæ; metathorax purpureus; petiolus purpureus, gracillimus, abdomine multo brevior; abdomen cupreum, longi-ovatum, subtus flavescens, thorace non brevius; pedes pallide flavi; alæ sub-cinereæ.

Male.—Bluish-green. Head very short, thinly and minutely punctured, a little broader than the thorax. Antennæ black, setaceous; scape pale yellow. Thorax very thickly punctured, in structure like that of *E. smaragdina*. Metathorax mostly purple. Petiole purple, linear, very slender, much shorter than the abdomen. Abdomen cupreous, smooth, compressed, elongate-oval, yellowish on each side and beneath, much narrower, but not shorter, than the thorax. Legs pale yellow. Wings slightly cinereous; basal calli pale yellow; veins black; ulna shorter than the humerus, much longer than the radius.

Length of the body 2½ lines; of the wings 5 lines.

Australia (?). In the British Museum.

Eucharis implexa.

Fœm.—Cuprea; caput antice viride; antennæ piceæ, filiformes, gracillimæ, basi fulvæ; scutum latissimum, scitissime striatum; metathorax magnus, viridis; petiolus æneo-niger, gracilis; abdomen nigrum, longi-ellipticum, supra concavum, thorace non longius; pedes pallide flavi; alæ limpidæ.

Female.—Cupreous. Head very short, nearly smooth, green in front, a little narrower than the thorax. Antennæ piceous, filiform, very slender, not longer than the thorax; scape tawny. Thorax gibbous, minutely punctured. Prothorax extremely short. Scutum very broad, transversely and very finely striated, indistinctly separated from the parapsides; the latter with the disk

partly quite smooth. Metathorax large, green, nearly vertical. Petiole æneous-black, slender, linear, hardly one-third of the length of the abdomen. Abdomen black, smooth, elongate-elliptical, concave above, keeled beneath, narrower but not longer than the thorax. Legs pale yellow. Wings limpid; veins black, pale yellow at the base; ulna very much shorter than the humerus, nearly twice the length of the radius.

Length of the body 3 lines; of the wings 6 lines.

This may be the female of *E. piceicornis*, notwithstanding the difference in the sculpture of the thorax.

Tasmania. Discovered by the Rev. T. Ewing and by Mr. Allport. In the British Museum.

Eucharis rufiventris.

Fœm.—Cuprea; antennæ nigræ, basi fulvæ; pectoris discus viridis; petiolus cupreus, brevis; abdomen rufum, basi nigrum; pedes fulvi; alæ limpidæ.

Female.—Cupreous; like the preceding species in structure. Antennæ black; scape tawny. Disk of the pectus green. Scutellum hindward and metathorax vertical. Petiole cupreous, not more than one-fourth of the length of the abdomen. Abdomen red, smooth, black towards the base. Legs tawny. Wings limpid; veins piceous; ulna very much shorter than the humerus, longer than the radius; stigma black.

Length of the body 3 lines; of the wings 6 lines.

Adelaide. In the British Museum.

Eucharis contigens.

Mas.—Nigra, lata; antennæ lineares, serratæ, basi sordide albidæ, apice rufescentes, capitis latitudine paullò longiores; parapsidum suturæ distinctæ; scutellum striatum, productum, acutum; abdomen altissimum, thorace non longius; pedes pallide flavescentes; alæ cinereæ.

Male.—Black, broad. Head very short, quite smooth, as broad as the thorax. Antennæ black, linear, serrated, a little longer than the breadth of the head; scape pale dingy whitish; joints transverse; tips dark reddish. Thorax short, roughly punctured. Prothorax extremely short. Sutures of the parapsides distinct; scutellum conical, longitudinally striated, terminating in a stout and rather long spine. Metathorax vertical. Petiole less than one-fourth of the length of the abdomen. Abdomen smooth, very deep, slightly compressed, narrower but

not longer than the thorax. Legs pale dingy yellow. Wings cinereous; veins black; ulna much shorter than the humerus, much longer than the radius.

Length of the body 2½ lines; of the wings 6 lines.

This species in the structure of antennæ and of the scutellum seems to connect *Eucharis* with *Thoracantha*.

Sarawak, Borneo. Discovered by Mr. Wallace. In the British Museum.

Genus Thoracantha.

Thoracantha cynipsea.

Fœm.—Æneo-nigra; facies striata; antennæ nigræ, filiformes, basi fulvæ, apice rufescentes, capitis latitudine non longiores; thorax altissimus; scutum maximum, transverse striatum; scutellum striatum, spinis duabus abdominis apicem attingentibus; petiolus brevissimus; abdomen nigrum, subtus apiceque fulvum, thorace non longius; pedes pallide fulvi; alæ limpidæ.

Mas.—Nigro-ænea; facies lateribus excavatis; antennæ piceæ, ramis longis æqualibus pubescentibus, basi fulvæ; scutum transverse striatum; scutellum sulco transverso, spinis duabus arcuatis, apice sub-contiguis, abdominis apicem paullò superantibus; alæ cinereæ.

Female.—Æneous-black. Head very short, not near so broad as the thorax; face longitudinally striated. Antennæ black, filiform, reddish at the tips, not longer than the breadth of the head; scape tawny. Thorax gibbous, very high. Prothorax extremely short. Scutum very large, transversely and finely striated; sutures of the parapsides slight. Scutellum longitudinally striated, ending in two slightly curved spines, which extend to the tip of the abdomen. Metathorax vertical, much developed, not punctured. Petiole very short. Abdomen black, smooth, elliptical, tawny beneath and at the tip, much narrower but not longer than the thorax. Legs pale tawny. Wings limpid; veins black; ulna much shorter than the humerus; radius obsolete.

Length of the body 2½ lines; of the wings 5 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Male.—Blackish-æneous. Head a little broader than the thorax; face excavated in the disk on each side. Antennæ piceous, with long pubescent branches of equal length; scape tawny, scutum transversely striated; parapsides smooth, finely striated towards

the scutum; scutellum with a transverse furrow, ending in two curved converging spines, whose tips are nearly contiguous, and which extend a little beyond the abdomen. Wings cinereous; veins black.

Villa Nova. Discovered by Mr. Bates.

Thoracantha pallescens.

Mas.—Purpurascente atra; antennæ filiformes, fulvæ, apice nigræ; thorax gibbus; scutum transverse striatum, antice sub-sulcatum; parapsidum suturæ parallelæ; scutellum spinis duabus pallidis sub-arcuatis, abdominis apicem fere attingentibus; petiolus piceus, striatus, gracillimus, abdomine non brevior; abdomen fulvum, thorace paullò brevius; pedes pallidissime fulvi; alæ fuscescente cinereæ.

Male.—Deep purplish-black. Head and thorax minutely punctured. Head very short, a little broader than the thorax. Eyes prominent. Antennæ filiform, tawny, black towards the tips, longer than the thorax. Thorax gibbous. Prothorax extremely short. Scutum transversely and very finely striated, with a slight longitudinal furrow in front; sutures of the parapsides slight, parallel to each other; scutellum ending in two compressed, slightly curved, pale, dingy spines, which extend nearly to the tip of the abdomen. Petiole piceous, linear, striated, very slender, as long as the abdomen. Abdomen tawny, smooth, much compressed, not longer than high, a little shorter than the thorax, and not more than half its breadth. Legs very pale tawny. Wings brownish-cinereous; disks pale cinereous; veins black; ulna nearly as long as the humerus; radius obsolete.

Length of the body 3 lines; of the wings 5 lines.

Villa Nova. Discovered by Mr. Bates. In the British Museum.

Thoracantha striatissima.

Mas.—Æneo-nigra; antennæ ramis longis pubescentibus; scutum transverse striatum; parapsidum suturæ distinctæ; scutellum spinis duabus striatis sub-arcuatis, abdominis apicem superantibus; petiolus abdomine multo longior; abdomen nigrum, fusiforme, valdè compressum, thorace multo longius.

Fœm.—Atra; frons striata; antennæ filiformes, basi albidæ; scutum sub-purpurascens, transverse striatum; scutellum striatum, spinis duabus abdominis apicem paullò superantibus; abdomen purpureo-nigrum, ellipticum, thorace non longius; pedes albidi; alæ limpidæ.

Male.—Æneous black, thinly pilose. Head a little broader than the thorax. Eyes prominent. Antennæ with long pubescent branches. Scutum transversely striated; parapsides almost smooth, with distinct sutures; scutellum ending in two striated, slightly curved and converging spines, which extend beyond the tip of the abdomen. Petiole much longer than the abdomen. Abdomen black, smooth, fusiform, much compressed, much shorter than the thorax, and less than half its breadth.

Villa Nova. Discovered by Mr. Bates.

Female.—Deep black, slightly pilose. Head very short, a little broader than the thorax; front with oblique striæ on each side. Eyes very prominent. Palpi whitish. Antennæ filiform, longer than the thorax; scape whitish. Thorax gibbous. Prothorax extremely short. Scutum transversely striated, with a purplish tinge; sutures of the parapsides slight; scutellum flat above, longitudinally striated, ending in two slightly curved and converging spines, which extend a little beyond the tip of the abdomen. Petiole linear, slender, striated, as long as the abdomen. Abdomen purplish-black, smooth, elliptical, keeled and whitish beneath, not longer than the thorax and little more than half its breadth. Legs whitish. Wings limpid; veins whitish; ulna nearly as long as the humerus; radius obsolete.

Length of the body 3 lines; of the wings 5 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Thoracantha inexagens.

Fœm.—Æneo-nigra; facies substriata; antennæ piceæ, filiformes, basi fulvæ; thorax gibbus; scutum transverse striatum; parapsidum suturæ parallelæ; scutellum sub-læve, spinis duabus striatis sub-arcuatis abdomen paullò superantibus; petiolus brevis, robustus; abdomen nigrum, altum, thorace multo brevius; pedes pallide flavi; alæ limpidæ.

Female.—Æneous-black. Head very short, hardly as broad as the thorax; face with extremely minute striæ, almost smooth. Antennæ piceous, filiform, shorter than the thorax; scape tawny. Thorax gibbous. Prothorax extremely short. Scutum transversely striated; parapsides almost smooth, their sutures parallel to each other; scutellum almost smooth, ending in two striated slightly curved spines, which extend a little beyond the tip of the abdomen. Metathorax vertical. Petiole short, stout. Abdomen black, smooth, much higher than long, keeled beneath, much shorter than the thorax, and little more than half its breadth.

Legs pale yellow; coxæ black. Wings limpid; veins black, pale yellow towards the base; ulna a little shorter than the humerus; radius obsolete.

Length of the body 2 lines; of the wings 4 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Thoracantha reflexa.

Fœm.—Æneo-nigra; antennæ piceæ, clavatæ, apice rufescentes; thorax gibbus; parapsidum suturæ distinctæ; scutellum sulcatum, quadristriatum, spinis duabus striatis arcuatis abdomen paullò superantibus; petiolus robustus, breviusculus; abdomen breve, altum; pedes nigri, tibiis tarsisque fulvis; alæ cinereæ.

Female.—Æneous-black. Head very short, almost smooth, as broad as the thorax. Antennæ piceous, clavate, reddish at the tips, not more than half the length of the thorax. Thorax gibbous. Prothorax extremely short. Scutum with a few transverse striæ; parapsides almost smooth, their sutures distinct; scutellum with a furrow in the middle, and with two striæ on each side, ending in two curved finely striated spines which extend a little beyond the tip of the abdomen. Petiole stout, rather short. Abdomen smooth, compressed, much higher than long, with only one distinct segment, keeled beneath, much shorter and narrower than the thorax. Legs black; tibiæ and tarsi tawny. Wings cinereous; veins black; ulna very much shorter than the humerus; radius less than one-fourth of the length of the ulna; cubitus not so very short as in most species.

Length of the body $1\frac{1}{2}$ line; of the wings 3 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Thoracantha flavicornis.

Fœm.—Nigra; antennæ flavescentes, sub-clavatæ, capitis latitudine non longiores; scutum transverse striatum; parapsidum suturæ indistinctæ; scutellum unisulcatum, spinis duabus latissimis sulcatis sub-arcuatis abdominis apicem fere attingentibus; petiolus robustus, striatus, longiusculus; abdomen valdè compressum, thorace paullò longius; pedes pallide flavi; alæ limpidæ.

Female.—Black. Head very short, very minutely punctured, much narrower than the breadth of the thorax. Antennæ yellowish, sub-clavate, not longer than the breadth of the head. Thorax gibbous, pubescent. Prothorax extremely short. Scutum

transversely striated; parapsides very minutely punctured, with slight sutures; scutellum punctured, with a distinct longitudinal furrow, emitting two very broad, ridged, slightly curved spines, which extend nearly to the tip of the abdomen. Petiole stout, striated, rather long. Abdomen smooth, much compressed, hardly longer than high; a little longer than the thorax, but not more than half its breadth. Legs pale yellow; coxæ black. Wings limpid; veins tawny; ulna much shorter than the humerus; radius obsolete; cubitus extremely short; stigma black.

Length of the body $2\frac{1}{2}$ lines; of the wings 4 lines.

Villa Nova. Discovered by Mr. Bates. In the British Museum.

Thoracantha atrata.

Mas.—Atra; antennæ nigræ, ramis longis æqualibus pubescentibus, basi piceæ; scutum transverse striatum; scutellum striatum, spinis duabus striatis arcuatis abdominis apicem paullò superantibus; petiolus gracilis, abdomine multo longior; abdomen fusiforme, altum, valdè compressum, thorace fere duplo brevius; pedes pallide flavi; alæ cinereæ.

Male.—Deep black. Head with very minute transverse striæ, as broad as the thorax. Antennæ black, with long pubescent branches of equal length; scape piceous. Scutum transversely striated; scutellum longitudinally striated, ending in two striated, curved, converging spines, which extend a little beyond the tip of the abdomen. Petiole linear, slender, much longer than the abdomen. Abdomen smooth, fusiform, deep, much compressed, hardly more than half the length of the thorax and much less than half its breadth. Legs pale yellow; coxæ black. Wings cinereous; veins black; ulna shorter than the humerus; radius obsolete.

Length of the body 3 lines; of the wings 5 lines.

In the British Museum.

This species is closely allied to *T. striatissima* (suprà, p. 380), but the spines of the scutellum are shorter and more curved.

Thoracantha alta.

Fœm.—Atra; antennæ nigræ, basi fulvæ; thorax gibbus; scutum transverse striatum; parapsidum suturæ indistinctæ; scutellum striatum, spinis duabus sub-arcuatis abdominis apicem attingentibus; petiolus abdominis dimidio vix brevior; abdomen fusiforme, altum, compressum, thorace paullò brevius; pedes pallide flavi; alæ limpidæ.

Female.—Deep black. Head smooth, a little narrower than the thorax. Antennæ black; scape tawny. Thorax gibbous, largely punctured; scutum transversely striated; sutures of the parapsides indistinct; scutellum longitudinally striated, ending in two slightly curved but not converging spines, which extend to the tip of the abdomen. Petiole linear, nearly half the length of the abdomen. Abdomen fusiform, smooth, deep, compressed, a little shorter and very much narrower than the thorax. Legs pale yellow; coxæ black. Wings limpid; veins brown; ulna hardly more than half the length of the humerus; radius obsolete.

Length of the body $2\frac{1}{2}$ lines; of the wings 5 lines.

Brazil. In the British Museum.

Thoracantha surgens.

Mas.—Atra; caput æneo-nigrum; antennæ nigræ, ramis longis æqualibus pubescentibus; thorax gibbus; scutum transverse striatum; parapsidum suturæ indistinctæ; scutellum subrugulosum, sulco transverso, spinis duabus arcuatis striatis abdominis apicem superantibus; petiolus gracilis, abdominis longitudine; abdomen fusiforme, compressum, thoracis dimidio non longius; pedes pallide flavi; alæ fuscescente cinereæ.

Male.—Deep black. Head æneous-black, a little broader than the thorax, very minutely punctured in front. Antennæ black, with long pubescent branches of equal length. Thorax gibbous. Scutum transversely striated; parapsides almost smooth, with slight sutures; scutellum somewhat rugulose, with a transverse furrow, ending in two curved, converging, striated spines, which extend beyond the tip of the abdomen. Petiole linear, slender, as long as the abdomen. Abdomen fusiform, smooth, compressed, not more than half of the length or of the breadth of the thorax. Legs pale yellow; coxæ black. Wings brownish-cinereous; veins black; ulna shorter than the humerus; radius obsolete.

Length of the body 2 lines; of the wings 4 lines.

Santarem. Discovered by Mr. Bates. In the British Museum.

Thoracantha apta.

Mas.—Atra, crassa, brevissima; caput parvum, sub-lævе; antennæ nigræ, capitis latitudine non longiores, ramis longis pubescentibus; thorax gibbus; scutum transverse striatum; scutellum striatum, spinis duabus rectis latis compressis abdominis apicem fere attingentibus; petiolus robustus, abdominis dimidio non longior; abdomen fusiforme, compressum,

thoracis dimidio brevius; pedes fulvi, femoribus nigricantibus; alæ limpidæ.

Male.—Deep black; very short and thick. Head almost smooth, lower and narrower than the thorax. Antennæ black, with long pubescent branches, not longer than the breadth of the head. Thorax gibbous, short; scutum transversely striated; scutellum longitudinally striated, ending in two straight, broad, compressed spines, which extend nearly to the tip of the abdomen. Petiole stout, about half the length of the abdomen. Abdomen smooth, fusiform, compressed, less than half of the length or of the breadth of the thorax. Legs tawny; coxæ black; femora blackish. Wings limpid; veins pale; ulna shorter than the humerus; radius obsolete.

Length of the body $1\frac{1}{2}$ line; of the wings 3 lines.

Santarem and Villa Nova. Discovered by Mr. Bates. In the British Museum.

Genus Schizaspidia.

Schizaspidia pretendens.

Mas.—Læte viridis; antennæ robustæ, ferrugineæ, 9-pectinatæ, thorace non longiores; thorax rude punctatus; scutellum longi-conicum, spinis duabus parvis; petiolus abdominis dimidio brevior; abdomen fusiforme, compressum, thorace valde brevius; pedes fulvi; alæ limpidæ.

Male.—Bright green. Head short, nearly smooth, as broad as the thorax. Antennæ stout, ferruginous, not longer than the thorax, with nine stout branches, which successively decrease in length. Thorax roughly punctured. Prothorax extremely short. Sutures of the parapsides slight; scutellum elongate-conical, armed with two short spines. Metathorax vertical, well developed. Petiole less than half the length of the abdomen. Abdomen fusiform, compressed, smooth, triangular when viewed laterally, very much shorter than the thorax and less than half its breadth. Legs tawny. Wings limpid; veins tawny, not extending to half the length of the wing; ulna extremely short, not longer than the cubitus; radius obsolete; cubitus short.

Length of the body $1\frac{3}{4}$ line; of the wings 3 lines.

This species may form a new genus.

Villa Nova. Discovered by Mr. Bates. In the British Museum.

Schizaspidia plagiata.

Mas.—Nigra, robusta; antennæ piceæ, 9-ramosæ, basi flavæ; thorax rude punctatus; prothorax maculis duabus late-

ralibus flavis ; pectus flavo bimaculatum ; scutellum conicum, bispinosum, flavo bimaculatum ; metathorax cornubus duobus apice rufescentibus ; petiolus abdominis dimidio brevior ; abdomen longi-ovatum, compressum, subtus flavescens, thorace valdè brevius ; pedes pallide flavi ; alæ fuscescente cinereæ.

Eucharis plagiata, Westwood, MSS.

Male.—Black, stout. Head nearly smooth, not broader than the thorax. Antennæ piceous, with nine branches ; scape yellow. Thorax largely punctured. Prothorax well developed in the middle, with a yellow spot on each side, where it is much narrower. A yellow spot on each side of the pectus in front of the fore-wings. Scutum short ; sutures of the parapsides slight ; scutellum conical, ending in two spines, with a yellow spot on each side. Metathorax well developed, armed with two stout horns with reddish tips. Petiole slender, less than half the length of the abdomen. Abdomen elongate oval, compressed, smooth, yellowish beneath, very much shorter and narrower than the thorax. Legs pale yellow. Wings brownish-cinereous ; veins piceous ; humerus thickened towards its tip ; ulna full half the length of the humerus ; radius nearly obsolete ; cubitus short, black, descending directly towards the disk.

Length of the body $3\frac{1}{2}$ lines ; of the wings 5 lines.

Para. Presented by Mr. Bates. In the British Museum.

Schizaspidia cyanea.

Mas.—Saturate cyanea, crassa ; antennæ nigræ, 8-ramosæ, capitis latitudine non longiores ; thorax rude punctatus ; parapsidum suturæ indistinctæ ; scutellum elongatum, spinis duabus crassis sub-arcuatis abdominis apicem longe superantibus ; petiolus robustus, striatus, abdominis dimidio brevior ; abdomen compressum, thoracis dimidio non longius ; pedes fulvi, femoribus nigris ; alæ anticæ macula sub-costali fusca diffusa.

Male.—Dark blue, thick. Head short, nearly smooth, not so broad as the thorax. Antennæ black, not longer than the breadth of the head, with eight branches which successively decrease in length. Thorax roughly punctured. Prothorax extremely short. Scutum broad ; sutures of the parapsides indistinct ; scutellum large, elongate, ending in two thick, slightly curved spines which extend much beyond the tip of the abdomen. Metathorax short, vertical. Petiole stout, striated, less than half the length of the abdomen. Abdomen smooth, compressed, not more than half the length, and less than half the breadth of the thorax. Legs tawny ;

femora black. Wings cinereous. Fore-wings with a diffuse brown spot by the stigma; veins piceous; ulna about half the length of humerus, longer than the radius; cubitus black, short; stigma rather large.

Length of the body $2\frac{1}{2}$ lines; of the wings 5 lines.

This and the preceding species may each form a new genus.

Amboina. Discovered by Mr. Wallace. In the British Museum.

Genus Palmon.

Palmon instructus.

Fœm.—Viridis; caput cyaneo-viride; antennæ fulvæ, apice nigræ; abdomen cyaneo-viride, subtus fulvum; tibiæ anteriores tarsique flavescentes; alæ limpidæ.

Female.—Green. Head and thorax very minutely punctured. Head bluish-green, as broad as the thorax. Antennæ tawny; scape yellowish beneath; club black. Petiole short. Abdomen bluish-green, compressed, deep, fusiform above, tawny beneath, shorter than the thorax. Oviduct and its sheaths very much longer than the body. Trochanters, tarsi and anterior tibiæ yellowish. Wings limpid; veins brownish; ulna much shorter than the humerus, more than four times the length of the radius; cubitus very short; stigma extremely small.

Length of the body $2\frac{1}{4}$ lines; of the wings 3 lines.

Hong Kong. Discovered by Mr. Bowring. Port Natal. Discovered by Mr. Plant. In the British Museum.

Note.—Chalcis? explorator (Coquerel, Mag. Zool. 1855, vii. 428, pl. 10, f. 4) seems to belong to an undescribed genus of *Torymidæ*.

Genus Ecdamua.

Fœm.—Corpus elongatum, punctatum. Caput parvum. Antennæ filiformes, thorace breviores. Prothorax conicus. Scutum angustum; parapsidum suturæ optimè determinatæ; scutellum parvum. Metathorax valdè determinatus. Petiolus gracilis, metathorace non brevior. Abdomen fusiforme, subcompressum, glabrum, thorace valdè longius. Oviductus longissimus. Pedes simplices; coxæ posticæ longissimæ. Alæ vitreæ, non notatæ.

Female.—Body elongate. Head and thorax thickly punctured. Head short, hardly as broad as the thorax; face vertical. Antennæ filiform, compact, shorter than the thorax. Prothorax

conical, well developed. Scutum narrow; sutures of the parapsides very conspicuous; scutellum small; metathorax very much developed. Petiole slender, linear, as long as the metathorax. Abdomen smooth, deep, fusiform, slightly compressed, very much longer than the thorax, of the usual structure. Oviduct very long. Legs simple; hind-coxæ very long. Wings unspotted; ulna much shorter than the humerus and than the radius; cubitus short; stigma small.

This genus is most nearly allied to *Palmon* and to *Callimome*. It differs from the former by the filiform antennæ and by the slender hind-femora, and from the latter by the long petiole of the abdomen.

Ecdamua macrotelus.

Fœm.—Læte cyaneo-viridis aut aurato-viridis, purpureo varia; antennæ nigræ, basi fulvæ; abdomen subtus fulvum; oviductus corpore triplo aut quadruplo longior; pedes albidi; femora cyaneo varia; tibiæ posticæ apice nigricantes; alæ sub-cinereæ, apice nigricante cinereæ.

Female.—Bright bluish-green, or golden green, varied with purple. Antennæ black; scape tawny. Abdomen tawny beneath. Oviduct from three to four times the length of the body. Legs whitish; anterior femora striped with blue; coxæ and hind-femora blue, varied with purple; hind-tibiæ blackish towards the tips. Wings slightly cinereous, blackish-cinereous at the tips; veins black.

Length of the body $2\frac{3}{4}$—3 lines; of the wings $4\frac{3}{4}$—5 lines.

Sierra Leone. Discovered by Mr. Foxcroft. Natal. Discovered by M. Gueinzius. In the British Museum.

The West African specimen is golden green, and is a little smaller, and apparently has a longer oviduct than the South African specimen.

Genus Pteromalus.

Pteromalus altifrons.

Fœm.—Æneus, brevis, latus; caput thorace paullò latius; frons magna; antennæ piceæ, clavatæ, basi fulvæ; abdomen ovatum, planum, thorace paullò brevius et latius; pedes rufescentes, breves, validi; alæ latæ, hyalinæ, venis fuscis, stigmate sat magno.

Female.—Æneous, short, broad. Head and thorax minutely punctured. Head a little broader than the thorax; face very deep. Antennæ piceous, clavate, about as long as the breadth of

the head; scape tawny; club conical. Thorax of the usual structure. Abdomen oval, flat above, hardly convex beneath, a little shorter and broader than the thorax. Legs reddish, short, stout. Wings broad, hyaline; veins brown; ulna descending obliquely to the disk after its junction with the humerus; its costal part shorter than the radius, and less than half the length of the humerus; stigma rather large.

Length of the body 1½ line; of the wings 2½ lines.

Port Natal. Discovered by Mr. Plant. In the British Museum.

Genus Cheiropachys.

Cheiropachys genualis.

Fœm.—Nigricante ænea, robusta; antennæ rufæ, nigro bifasciatæ; pedes rufi, genubus albis; alæ vitta discali arcuata fusca.

Female.—Blackish æneous, stout. Head and thorax minutely punctured. Head short, not broader than the thorax; face slightly retracted. Antennæ red, slender, filiform, inserted in the middle of the front, fully as long as the thorax; scape slender; 2nd joint elongate-cyathiform, black at the tip; 3rd and 4th black, distinct; 10th, 11th and 12th black; 13th red. Abdomen lanceolate, flat above, keeled beneath, narrower and much longer than the thorax. Legs red, stout, knees white, the white hue extending over the basal part of the hind-tibiæ. Wings cinereous. Fore-wings with a curved, brown, discal stripe; veins black; ulna full half the length of the humerus, as long as the radius; cubitus rather long, slightly curved.

Length of the body 4½ lines; of the wings 6 lines.

Port Natal. Discovered by Mr. Plant. In the British Museum.

Genus Lælaps, Haliday.

Fœm.—Corpus convexum, elongatum, non latum; caput et thorax sub-punctata. Caput thorace latius; frons brevissima; facies excavata. Antennæ 14-articulatæ, graciles, subclavatæ, prope os insertæ; articulus 1us longus, linearis; 3us brevis; 4us et sequentes brevissimi; clava longi-conica. Prothorax antice paullò angustior, non angulatus. Parapsidum suturæ bene determinatæ; paraptera et epimera magna; scutellum scitissime striatum, sutura transversa. Metathorax bene determinatus, rude punctatus. Petiolus brevissimus. Abdomen glabrum, plus minusve lanceolatum; segmentum 1um longissimum. Pedes graciles, inermes, longiusculi;

tibiæ intermediæ calcare longo apicali. Alæ anticæ sat angustæ.

Female.—Body convex, elongated, not broad. Head and thorax minutely punctured. Head broader than the thorax, with a few bristles, front very short; face vertical, excavated. Antennæ slender, sub-clavate, 14-jointed, seated near the mouth, more than twice the length of the breadth of the head; scape long, linear; 2nd joint less than one-third of the length of the scape; 3rd joint short; the following joints very compactly joined together; the three terminal joints forming an elongated conical club. Prothorax not angular, a little narrower in front, nearly twice broader than long. Scutum with the sutures of the parapsides well defined; paraptera and epimera large. Scutellum with a transverse suture, longitudinally and very finely striated. Metathorax well developed, largely punctured, nearly horizontal, with a protuberance in front. Petiole very short. Abdomen smooth, as long as the thorax or much longer, lanceolate hindward; 1st segment very long. Legs slender, unarmed, rather long; middle tibiæ with a long apical spur. Fore-wings rather narrow; ulna a little shorter than the humerus; radius much shorter than the ulna; cubitus long, about one-third of the length of the ulna, forming a very acute angle with the radius.

Lælaps picta.

Fœm.—Nigricante ænea; antennæ nigræ, fulvo fasciatæ; abdomen æneum, basi purpureum et cyaneum, apice rufescens; oviductus exsertus; pedes nigri, flavo fasciati; alæ anticæ litura transversa nigra, vitta diffusa nigricante.

Female.—Blackish-æneous. Antennæ black, with a broad tawny band before the middle. Metathorax black. Abdomen æneous, as long as the thorax, bright purple and blue towards the base, reddish at the tip; sheaths of the oviduct black, extending just beyond the tip. Legs black; trochanters, knees, tibiæ and tarsi towards the base, fore-coxæ and hind-coxæ pale yellow. Wings cinereous. Fore-wings with a transverse black mark at the end of the humerus, and with a blackish stripe which is dilated and paler exteriorly and occupies the whole of the apical part; veins black.

Length of the body 5 lines; of the wings 7 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Lælaps decorata.

Fœm.—Saturate cyanea; antennæ nigræ; scuti discus æneoviridis; scutellum purpurascens; abdomen rufum, apicem

versus valdè elongatum; pedes nigri, albo-fasciati; alæ anticæ gutta costali nigra, vitta nigricante, fascia alba.

Female.—Deep blue, thickly punctured. Head obliquely striated on each side in front. Antennæ black. Disk of the scutum æneous-green; scutellum purplish. Metathorax black, roughly punctured. Abdomen red, smooth, shining, nearly twice the length of the thorax; the apical part much elongated, lanceolate, compressed. Legs black; coxæ, knees and posterior tarsi except towards the tips white; fore-tarsi white at the base. Wings cinereous. Fore-wings with a black dot behind the end of the humerus, and with a slightly oblique blackish stripe which extends from the dot to the cubitus, where it is intersected by the white band; veins black.

Length of the body 5 lines; of the wings 6 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Genus Calosoter.

Calosoter bifasciatus.

Fœm.—Niger; caput subtus cyaneo-viride, antice excavatum; antennæ nigræ; pectus saturate cyaneum; abdomen cupreum, viridi varium; tarsi albi; alæ anticæ fasciis duabus latis nigricantibus.

Female.—Black. Head and thorax dull, very minutely punctured. Head bluish-green beneath, a little broader than the thorax, deeply excavated in front. Antennæ black. Pectus dark blue. Abdomen cupreous, lanceolate, varied with green, longer than the thorax. Tarsi white; fore-tarsi dark tawny. Wings cinereous; fore-wings with two broad blackish bands; veins black; ulna a little shorter than the humerus, a little longer than the radius; cubitus long; stigma small.

Length of the body $2\frac{1}{2}$ lines; of the wings 4 lines.

Sarawak, Borneo. Discovered by Mr. Wallace. In the British Museum.

Genus Epistenia.

Epistenia scutata.

Fœm.—Læte viridis; antennæ nigræ; thorax cyaneo purpureo et æneo varius; abdomen lanceolatum, scite punctatum, aurato fasciatum, apice purpureum; pedes rufi; femora antica dilatata; alæ anticæ vitta discali nigricante.

Female.—Bright green. Head and thorax largely punctured. Head very little broader than the thorax; face horizontal, eyes

pubescent, large, prominent. Antennæ black, slender, nearly filiform, seated by the mouth, not longer than the thorax. Thorax partly blue or purple; disk of the scutum and scutellum, except the tip, æneous. Abdomen lanceolate, finely punctured, flat above, keeled beneath, golden-green beyond the middle, purple at the tip, very much longer than the thorax. Legs red; fore-femora dilated and forming an edge beneath, except towards the tips. Wings cinereous. Fore-wings with a blackish discal stripe, not extending to the tip of the abdomen; veins black; ulna nearly as long as the humerus, longer than the radius.

Length of the body 5 lines; of the wings 6 lines.

Para. Discovered by Mr. Bates. In the British Museum.

Epistenia basalis.

Fœm.—Læte cyaneo-viridis; antennæ nigræ; thorax suturis purpurascentibus; abdomen æneo-viride, lanceolatum, scitissime punctatum, basi cupreo-rufum, apice purpurascens; pedes rufi; femora antica incrassata; alæ cinereæ.

Female.—Bright bluish-green. Head and thorax finely punctured. Head bright green, broader than the thorax; face oblique. Eyes pubescent. Antennæ black, seated near the mouth; scape green. Thorax purplish about the sutures. Abdomen æneous-green, lanceolate, very finely punctured, flat above, hardly keeled beneath, bright cupreous-red at the base, purplish at the tip, very much longer than the thorax, extending much beyond the fore-wings. Legs bright red; fore-femora incrassated. Wings cinereous; veins black; ulna shorter than the humerus, a little longer than the radius.

Length of the body 4 lines; of the wings 5 lines.

Tapayos. Discovered by Mr. Bates. In the British Museum.

Epistenia æqualis.

Fœm.—Læte cyaneo-viridis; caput antice bituberculatum; antennæ nigræ; scutellum æneo-viride; abdomen breve, lanceolatum, glabrum, apice purpurascens; pedes nigri; tarsi albidi; alæ fusco-cinereæ.

Female.—Bright bluish-green. Head and thorax roughly scabrous or very largely punctured, as in *Perilampus*. Head æneous hindward, with a protuberance on each side in front, a little broader than the thorax; face extremely oblique, nearly horizontal. Antennæ black, stout, filiform, seated far from the mouth, not longer than the thorax. Scutellum æneous-green.

Abdomen short, lanceolate, smooth, convex above, keeled beneath, purplish at the tip, not longer than the thorax. Legs black, hardly stout; tarsi whitish, with black tips. Wings brown-cinereous; veins black; ulna not one-fourth of the length of the humerus, much shorter than the radius.

Length of the body $3\frac{1}{2}$ lines; of the wings 5 lines.

St. Paul. Discovered by Mr. Bates. In the British Museum.

Genus Lycisca.

Lycisca hastata.

Fœm.—Splendide viridis, longa, gracilis; antennæ nigræ; thoracis suturæ cupreæ; scutellum apice cyaneo-purpureum; metathorax purpureus, lateribus viridibus; abdomen cupreum, longissimum, scitissime punctatum, basi rufum, apicem versus filiforme, apice viridi; pedes rufescentes, tibiis apice tarsisque nigris, femoribus anticis incrassatis; alæ anticæ subfuscescentes.

Female.—Brilliant green, long, slender. Head and thorax thickly punctured. Head a little broader than the thorax; face nearly vertical. Antennæ black; first joint cupreous, inserted at some distance from the mouth. Thorax cupreous along the sutures. Prothorax well developed, attenuated in front. Sutures of the parapsides very distinct; scutellum bluish-purple at the tip. Metathorax purple, transverse, short, bright green on each side. Abdomen sessile, lanceolate, very long, much attenuated, very finely punctured, flat above, keeled beneath, red at the base, cupreous hindward, more than twice the length of the thorax; apical part filiform, very long, dark purplish-æneous, bright green at the tip. Legs reddish; coxæ bright green; tibiæ towards the tips and tarsi black; fore-femora incrassated; fore-tibiæ short, slightly dilated beneath. Wings cinereous. Fore-wings slightly brownish-tinged; veins black; ulna much more than half the length of the humerus, a little shorter than the radius; cubitus continued nearly to the tip of the wing by a supplementary slightly curved vein, which is emitted by the stigma; a blackish spot at the end of the humerus and another on the stigma.

Length of the body 9 lines; of the wings 6 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Lycisca apicalis.

Fœm.—Læte cyaneo-viridis; antennæ nigræ; thorax sat brevis; scutum et scutellum cuprea; abdomen lanceolatum, scitissime punctatum, apicem versus purpurascens, filiforme; pedes rufi;

femora antica sub-incrassata; alæ anticæ suffuscescentes, maculis duabus nigricantibus.

Female.—Bright bluish-green, elongate. Head and thorax thickly punctured. Head hardly broader than the thorax; face oblique. Antennæ black, filiform, not longer than the thorax; first joint green, inserted near the mouth. Thorax shorter than in the preceding species. Prothorax short, transverse. Scutum and scutellum cupreous; the latter green at the tip, beyond which the metascutellum terminates in a curved spine. Abdomen sessile, lanceolate, much attenuated, very finely punctured, flat above, keeled beneath, a little more than twice the length of the thorax; sutures of the segments purplish; apical part filiform, compressed, purplish. Legs red; fore-femora slightly incrassated; fore-tibiæ short. Wings cinereous. Fore-wings slightly brownish-tinged, with two blackish spots; veins black, in structure like those of the preceding species.

Length of the body 8 lines; of the wings 6 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

Genus Balcha.

Fœm.—Corpus longum, angustum. Caput et thorax dense punctata. Caput thorace non latius; facies non obliqua. Antennæ filiformes, gracillimæ, thorace longiores. Prothorax brevissimus. Parapsidum suturæ indistinctæ; scutellum sat parvum. Metathorax brevis. Abdomen sessile, lanceolatum, compressum, glabrum, planum, subtus carinatum, postice sub-ascendens, thorace fere duplo longius. Pedes breves, robusti; femora antica sub-dilatata. Alæ sat angustæ.

Female.—Body long, narrow. Head and thorax thickly punctured. Head as broad as the thorax; face vertical. Antennæ filiform, very slender, seated rather far from the mouth, longer than the thorax. Prothorax very short. Scutum broader than long; sutures of the parapsides indistinct; scutellum rather small. Metathorax short. Abdomen smooth, sessile, lanceolate, compressed, flat above, keeled beneath, slightly ascending hindward, almost twice the length of the thorax. Legs short, stout; fore-femora slightly dilated. Wings rather narrow; ulna more than half the leugth of the humerus, as long as the radius; cubitus rather long.

This genus seems to be most nearly allied to *Stenocera*, but is sufficiently distinct.

Balcha cylindrica.

Fœm.—Viridis; caput et thorax purpureo cyaneo et cupreo varia; antennæ nigræ, articulo 1° fulvo; abdomen æneo-viride, apicem versus cupreum; pedes nigri, tibiis pallide flavis, tarsis fulvis, tibiis tarsisque anticis rufescentibus; alæ cinereæ, apice fuscescentes.

Female.—Green. Head and thorax varied with purple, blue, and cupreous. Antennæ black; scape tawny. Abdomen æneous-green, bright cupreous towards the tip. Legs black; trochanters and knees reddish; tibiæ pale yellow, black at the base, tawny at the tips; tarsi tawny; fore-tibiæ and fore-tarsi reddish. Wings cinereous, brownish towards the tips; veins black.

Length of the body $5\frac{1}{2}$ lines; of the wings 5 lines.

Port Natal. Discovered by M. Gueinzius. In the British Museum.

Genus Prionopelma.

Prionopelma consors.

Fœm.—Læte viridis, cyaneo purpureoque varia; antennæ nigræ; abdomen rufum, apice cyaneo-viride; oviductus corpore duplo longior; pedes nigri, coxis femoribusque rufis; alæ cinereæ.

Female.—Bright green, varied with blue and with purple. Antennæ black, longer than the thorax. Abdomen bright red, bluish-green at the tip, keeled beneath, not longer than the thorax. Oviduct and its sheaths more than twice the length of the body. Legs black; coxæ and femora red. Wings cinereous; veins black.

Length of the body 6 lines; of the wings 8 lines.

New Grenada. Discovered by Mr. Stevens.

Prionopelma purpurea.

Fœm.—Læte cyanea, purpureo varia; antennæ æneo-nigræ, filiformes; prothorax et metathorax breves; scutum bene determinatum, disco excavatum; pectus viride; abdomen purpureo cupreum, subtus viride; oviductus corpore plus duplo longior; femora intermedia apice incrassata testacea; tibiæ intermediæ basi testaceæ; alæ anticæ vitta lata nigricante.

Female.—Bright blue, varied with purple. Antennæ filiform,

æneous black, longer than the thorax; scape dark green. Prothorax and metathorax short. Scutum of the mesothorax much developed, excavated in the disk. Pectus bright green, mesopectus very large. Abdomen purplish-cupreous, bright green beneath, narrower but not longer than the thorax. Sheaths of the oviduct much more than twice the length of the body. Legs æneous-black; coxæ and femora green, tinged with blue and purple; middle femora incrassated at the tips, which are testaceous; middle tibiæ elongated, with a long apical spur, testaceous at the base; middle tarsi incrassated. Wings cinereous. Fore-wings with a broad blackish stripe; veins black; ulna much shorter than the humerus, longer than the radius; cubitus rather long.

Length of the body 5 lines; of the wings 7 lines.

Tapayos. Discovered by Mr. Bates. In the British Museum.

Var. Female.—Smaller. Head green. Thorax bluish-green, with purple streaks. Wings with a narrower discal stripe.

Length of the body 4 lines; of the wings 5 lines.

Ega. Discovered by Mr. Bates. In the British Museum.

This can hardly be the female of *P. splendens*, for the cubitus forms a less acute angle with the radius, and the stigma is larger.

Prionopelma splendens.

Mas.—Læte viridis; antennæ æneo-virides, extrorsum crassiores; thorax purpureo lineatus; scutum non excavatum; abdomen fusiforme, disco purpurascente cupreo; pedes virides, femoribus tibiisque intermediis rufis; alæ fumoso-fuscæ, basi cinereæ.

Male.—Bright green. Head largely punctured; grooves of the front purple. Antennæ æneous-black; scape purple, green beneath; flagellum slightly increasing in thickness outward; club elongate-conical, excavated beneath, not broader than the preceding joint. Thorax with purple lines along the sutures; scutum not concave. Abdomen fusiform, narrower and a little shorter than the thorax; disk purplish-cupreous. Legs bright green; tarsi black; middle femora and middle tibiæ red, the latter with black tips. Wings smoky-brown, cinereous towards the base; veins brown; stigma extremely small.

Length of the body $4\frac{1}{2}$ lines; of the wings 6 lines.

Villa Nova. Discovered by Mr. Bates. In the British Museum.

Genus Entedon.

Entedon perturbatum.

Mas.—Aureo-viride; caput antice cyaneo-viride; antennæ nigræ, filiformes, basi cyaneo-virides; parapsidum suturæ indistinctæ; petiolus brevis; abdomen cupreum, breve, disco basali flavescente; pedes cyaneo-virides, tarsis posterioribus albis; alæ hyalinæ.

Male.—Golden green. Head and thorax rather largely punctured. Head fully as broad as the thorax, bluish-green in front. Antennæ black, filiform, as long as the thorax, acuminated at the tips; scape bluish-green. Prothorax very short. Sutures of the parapsides indistinct. Metathorax well developed. Petiole short. Abdomen cupreous, smooth, short, elliptical, shorter than the thorax; basal part of the disk dull yellowish. Legs bluish-green; knees, tarsi, and tips of the tibiæ, white; fore-tarsi piceous. Wings limpid; veins brown; ulna as long as the humerus; radius and cubitus very short.

Length of the body 1½ line; of the wings 2½ lines.

Port Natal. Discovered by Mr. Plant. In the British Museum.

XXIX. *On some New Species of South African Butterflies, collected in British Kaffraria by* W. S. M. D'Urban, Esq., *during* 1860-61. By Roland Trimen, Esq.

[Read 7th July, 1862.]

Mr. D'Urban's researches in British Kaffraria, a region hitherto almost unknown to the Lepidopterist, have resulted in the discovery of a Rhopalocerous Fauna of upwards of 90 species. When it is borne in mind that Mr. D'Urban was barely a twelvemonth in the country, and that the season was an unfavourable one, and remarkable for the scarcity of many Lepidopterous insects usually abundant, it must be granted that this is a highly satisfactory result, and one that seems to give promise of a rich harvest to future entomological explorers. The following table gives an approximate idea of the relative representation of the various Families in British Kaffraria, as compared with the whole number of species at present known to me as natives of extra-tropical South Africa.

	No. of South African Species.	No. of British Kaffrarian Species.
Papilionidæ	11	6
Pieridæ	42	22
Danaidæ	4	1
Acræidæ	15	3
Nymphalidæ	34	11
Satyridæ	17	7
Eurytelidæ	2	1
Erycinidæ?	1	0
Lycænidæ	47	33
Hesperidæ	26	10
	199	94

Among Mr. D'Urban's British Kaffrarian captures, as above tabulated, I find nine apparently new species, thus distributed among the families:—*Satyridæ*, 1; *Lycænidæ* (comprising a new genus), 5; *Hesperidæ*, 3.* In addition to these are several insects concerning whose specific identity I am much in doubt, such as an

* One of these three, *Nisoniades Pato*, was taken, not in Kaffraria, but in Albany. It is found in Natal.

Anthocharis, very closely allied to *A. Delphine*, Boisd., a *Terias*, which seems nearly related to *T. Drona*, Horsf., &c. In these doubtful cases, I think it right not to found new species on solitary specimens, but to await the result of further explorations.

SATYRIDÆ, Sws.

Genus Satyrus, Doubleday.

Satyrus dendrophilus.

Expands 2 in. 8 lin.

Dull-brown. *Fore-wing:* a fulvous-ochreous tinge over basal half and to near anal angle; beyond middle, an irregularly-sinuate transverse row of 7 spots, ill-defined externally, from costa to sub-median nervure; the spot on costal edge whitish, the others ochreous, elongated longitudinally, the largest between 2nd and 3rd median nervules; beyond these, a sub-marginal row of 5 small, whitish spots indistinctly ringed with blackish, from 4th sub-costal to 2nd median nervule; a pale-brown hind-marginal border, divided by a dark-brown line. *Hind-wing:* fulvous-ochreous; hind-marginal border as in fore-wing, but wider, with another dark line separating it from the ground-colour; a sub-marginal row of 7 white-pupilled, rounded, black spots, the last of which, above sub-median nervure close to anal angle, is bipupillate; inner-marginal region pale-brownish. Underside.—Paler, with a slight violaceous lustre. *Fore-wing:* markings similar, fainter; a dark, waved streak crossing discoidal cell, which has likewise a faint-ochreous and 2 faint-whitish transverse markings; row of whitish spots as above, but the second distinctly ringed with black and yellow; apex suffused with faint-brownish. *Hind-wing:* same colour as apex of fore-wing, with a strong violaceous gloss; 4 irregular, interrupted, brown striæ crossing basal half; row of ocelli as above, but in pale-yellow rings; 2 dentate striæ bordering hind-margin, which is paler than rest of wing: a space from discoidal nervule to sub-median nervure near anal angle irrorated with fuscous scales.

The fore-wings in this fine *Satyrus* are not produced at the apex, which is rounded; the hind-margin is slightly crenelated; and none of the nervures present any swelling at the base. The hind-wings are large and broad; the hind-margins moderately dentate, —the dentation on 1st median nervule being very slightly more prominent than the rest; and the inner-margins rather strongly convex, forming a shallow and incomplete groove.

"Forest on the hill above Frankfort, March 28th, 1861,—abundant. Pitches frequently on tree-trunks, head downwards."—D'Urban in litt.

LYCÆNIDÆ, Leach.

Genus D'Urbania, n. g.

Imago.—Head of moderate size: eyes ovate, smooth, rather small, slightly prominent; palpi rather long, porrected divergently, scarcely rising above forehead, scaly, 2nd joint long and stout, terminal joint slender; antennæ short (especially in ♀), rather stout, with a well-marked, sub-cylindrical, rather abruptly-formed, obtuse-ended club, and with conspicuous white rings; no tuft of hairs on forehead. Thorax compressed, short, not stout, with a few short hairs laterally and posteriorly: prothorax with a dense clothing of short hair. Wings large, elongate, rounded, entire. *Fore-wing:* costa moderately arched from base; apex rounded; hind-margin rather markedly convex, the anal angle being very much rounded off; inner margin straight; nervures short and weak, yet with a slight inclination to be swollen at base; the nervules unusually long, the 1st sub-costal and 3rd median nervules being inserted very near to base; discoidal cell short, rather wide at extremity, apparently closed by a scarcely-perceptible nervule. *Hind-wing:* costa strongly arched just at base, thence almost straight; hind-margin as in fore-wing, the apical and anal angles being yet more rounded off; inner-margins almost straight, just covering the sides of abdomen, but no part of its under-surface, being widely separate at its base; discoidal cell closed, rather longer and wider than in fore-wing. Legs short, the femora stout, scaly; tarsi of fore-legs of ♂ composed of a single elongate joint, with the ungues obsolete,—those of ♀ with the joints compressed, and provided with minute ungues; posterior tibiæ in both sexes destitute of spurs. Abdomen short, compressed.

Larva and *pupa* unknown.

I have dedicated this curious and interesting genus to my friend W. S. M. D'Urban. It is, without question, the most valuable result of his Kaffrarian researches. The single species on which it is founded presents an aspect wholly at variance with that of the typical *Lycænidæ*, possessing none of the metallic or silky lustre of the *Lycænæ* or *Chrysophani;* the general colouring and texture, as well as the shape, of the wings, and the weak structure of the body, forcibly reminding one of the *Satyridæ*. The fuscous-and-whitish irrorated under-surface differs widely from all those that

I have examined in this family, unless it be that of the aberrant *Pentila* (*Tingra*, Bd.) *tropicalis*, Bd.; indeed, *D'Urbania* seems more nearly allied to *Pentila* than to any other genus of *Lycænidæ*, but is at once recognized by the much longer palpi and short abdomen (which latter is elongate in *Pentila*, and thickened at its extremity). I was inclined to refer this curious insect to the *Erycinidæ;* but the antennæ, the palpi, and the semi-complete fore-legs of the ♂, seem so decidedly Lycænideous that I think it right to include it in the latter group. As frequently happens in cases of this nature, the habits of this genus tend to support its analogy with the *Satyridæ*, Mr. D'Urban having constantly taken it settling on rocks and large stones,—not on flowers, like the great majority of the family.

D'Urbania Amakosa.

Exp. 2 in. 2 lin.—2 in. 6 lin.

Dark-brown, inclining to fuscous: each wing with a sub-marginal, curved, transverse row of orange-yellow spots.

♂ *Fore-wing:* row of six spots, forming almost a semicircle, extending from sub-costal to sub-median nervure,—sometimes indistinctly marked. *Hind-wing:* somewhat paler than fore-wing; only four spots in transverse row, which is not markedly curved, extending from 2nd sub-costal to 3rd median nervule. Cilia of both wings conspicuously chequered brown and white. Under-side.—*Fore-wing:* before transverse row of spots thinly, beyond it thickly, irrorated with whitish; row of orange spots increased to a broad macular stripe; the irrorations immediately succeeding stripe forming a series of acute, rather indistinct lunules. *Hind-wing:* universally and densely irrorated with whitish; the position of the transverse row of upper-side faintly indicated by some scarcely distinguishable whitish spots, followed by some indistinct fuscous lunules. Cilia not so conspicuously chequered as above.

♀ Orange spots in both wings enlarged and confluent, forming a broad band, which in fore-wing widens at its lower extremity. Cilia as in ♂. Under-side.—Quite similar to that of ♂: orange band of fore-wing paler, and narrower than in ♂.

"King William's Town and Windvogelberg; November and January. Common, sitting on rocks and stones."—D'Urban, in litt.

Mr. Bowker has since forwarded *D. Amakosa* from Kaffraria Proper, and notes it as "rare; found in open on rocky hills; easily caught."

Genus Lycæna, Fab.

* Tailed group.

Lycæna Anta.

Exp. 1 in. 1 lin.—1 in. 5 lin.

♂ Shining æneous-brown, shot with violet from bases; cilia greyish-white. *Hind-wing:* a rather long, linear, black, white-tipped tail at extremity of 3rd median nervule; 2 black spots on hind-margin, respectively just above and below origin of tail; anal angle rather prominently lobed, and marked with a greenish-silvery-scaled, black spot. Underside.—Pale-greyish; in both wings an incomplete, brownish-grey, whitish-edged ring, closing discoidal cell, a row of similar rings, confluent, forming a rather broad transverse band beyond middle, and a sub-marginal row of brownish-grey, lunular markings, indistinctly white-edged inwardly and outwardly. *Hind-wing:* near base, 3 whitish-ringed fuscous spots, forming a short transverse row; hind-marginal spot above tail marked inwardly by a yellowish lunule, that below tail all bluish-silvery; spot on anal lobe inwardly scaled with bluish-silvery. On inner margin of *fore-wing*, about middle, a small tuft of black, bristly hairs.

♀ Bluer than ♂, excepting near hind-margins; markings similar. Underside.—Quite similar, the markings more distinct.

"King William's Town and Graham's Town; collected by Mrs. Drake."—D'Urban, in litt.

Specimens from Natal in Mr. Hewitson's Collection.

This *Lycæna* evidently belongs to the *Bœtica* group of the genus, having much of the facies of that species. The lobe on anal angle of hind-wing, however, would seem to indicate an approach to *Amblypodia* and allied genera.

Lycæna Siwani.

Exp. 1 in.

♀? Pale-blue, inclining to violet, with greyish margins. *Fore-wing:* greyish edging borders costa, widens to a broad space at apex, and thence narrows to a point at anal angle. *Hind-wing:* greyish edging broad on costa, narrowing to a thin line along hind-margin; from 1st median nervule to anal angle a sub-marginal, macular, orange band, marked exteriorly with two black spots, between 1st and 3rd median nervules (the upper spot very indistinct); a short, linear, greyish-white tail at extremity of 3rd median nervule. Underside.—Pale whitish-grey; in both wings a greyish, white-margined streak closing discoidal cell; a row of

small, black, white-ringed spots beyond middle (in fore-wing from 5th sub-costal nervule to sub-median nervure, and the first spot very minute,—in hind-wing very irregular, the spots 9 in number), and 2 indistinct sub-marginal lines. *Hind-wing:* 3 conspicuous, black, white-ringed spots near base, viz. one above sub-costal nervure, the 2nd in cell, the 3rd below sub-median nervure; orange band commencing on discoidal nervule. Cilia greyish-white.

"King William's Town, February; rare."—D'Urban, in litt.

** Non-caudate group.

Lycæna Kama.

Exp. 11 lin.—1 in.

♀. Pale greyish-brown, shot from bases with bright-blue. *Fore-wing:* blue occupies discoidal cell, extending on inner-margin to beyond middle; along hind-margin a row of very indistinct, whitish-edged, dusky marks. *Hind-wing:* blue extending through cell, covering median nervules; crossing the latter is a macular, whitish fascia, reaching to 2nd sub-costal nervule; along hind-margin a row of white annulets, of which one (between 2nd and 3rd median nervules) encloses a black spot. UNDERSIDE.—Pale brownish-grey; in both wings an imperfect white annulet, enclosing a space slightly darker than ground-colour, closes cell; a row of brownish, white-edged, confluent spots beyond middle (in fore-wing from costa to sub-median nervure); and a sub-marginal row of confluent, brownish lunules, white-edged interiorly and exteriorly; between the row of spots and that of lunules a whitish space, more conspicuous in hind-wing. *Hind-wing:* a transverse row of 4 white-ringed black spots near base; between 1st and 3rd median nervules 2 black spots, dotted with bluish-silvery, and bounded interiorly by an orange crescent,—the lower spot the smaller.

"King William's Town, March; not common."—D'Urban, in litt.

Lycæna Gaika.

Exp. 9 lin.

♂. Pale-blue; a narrow brownish-grey border on hind-margins; cilia whitish. UNDERSIDE.—Whitish-grey; with minute, whitish-ringed, blackish spots: in both wings a thin, greyish, whitish-edged mark closing discoidal cell; a transverse row of spots beyond middle (that of fore-wing strongly curved, commenc-

ing with two minute spots on costa before middle, and reaching to sub-median nervure;—that of hind-wing composed of 8 spots, from costa about middle to inner margin); two dentate, sub-marginal, lunular, greyish, whitish-edged lines; and a thin, black, bounding line immediately within cilia. *Hind-wing:* a basal black spot; before middle a transverse row of 3 spots; no metallic-centred spots near anal angle.

This *Lycæna* seems allied to *L. Acca*, Westw., but the wings are longer and of more delicate texture, and the abdomen also is more slender and elongate than in most of the genus.

"King William's Town, March 30th, 1861."—D'Urban, in litt.

Three specimens of this butterfly, in the South African Museum, were forwarded with other insects collected by Mrs. Latham in Damara-land.

Family HESPERIDÆ, Leach.

Genus Nisoniades, Hübn.

Nisoniades Pato.

Exp. 1 in. 3 lin.

Shining grey-brown, indistinctly varied with yellowish; marked with vitreous spots. *Fore-wing:* a reniform vitreous spot closing discoidal cell; a smaller, rounded spot just above it; 3 minute, contiguous spots forming a short transverse line, on sub-costal nervules near apex; between 1st and 3rd median nervules 2 good-sized spots, the lower one the larger. *Hind-wing:* an ovate vitreous spot closing discoidal cell. Underside.—Vitreous spots as on upperside; yellow variegation much more conspicuous, especially in hind-wing. *Fore-wing:* base yellow-dusted; an indistinct yellow mark immediately above spots on median nervules; along hind-margin a yellow, sub-macular band. *Hind-wing:* 2 or 3 yellowish spots near base; about middle, an irregular, macular, yellow streak; beyond it, another similar streak, merged with hind-marginal yellow except near apex.

This species, of which Mr. D'Urban possessed but a single specimen, is allied to *N. Sabadius*, Boisd., found in Mauritius and Bourbon, and also in South Africa. The yellow variegation and the vitreous spot in hind-wing suffice at once to distinguish *N. Pato.*

"Pluto's Vale, Fish River Bush, April 4th, 1861." D'Urban, in litt.

Genus Cyclopides, Hübn.

Cyclopides Macomo.

Exp. 1 in. 2 lin. (single specimen).

Brown; with quadrate, ochreous-yellow spots. *Fore-wing:* base yellow-scaled; a transverse row of 3 spots from extremity of cell to sub-median nervure before middle; beyond middle, a row of 6 spots—3 near apex, on sub-costal nervules,—3 larger, between 1st median nervule and sub-median nervure. *Hind-wing:* a small, disco-cellular spot; beyond middle, between 1st sub-costal nervure and sub-median nervure, an irregular row of 5 spots, of which the 2nd is much the largest, and the last indistinct. Underside.—Creamy-yellow, tinged with greenish; with black dots. *Fore-wing:* inner-marginal portion, from base, blackish, contrasting strongly with lowermost spots of outer transverse row; a minute, disco-cellular, black dot; a little behind it, 4 similar dots marking inner extremities of upper spots of outer transverse row; a sub-marginal row of 4 blackish dots, radiating to hind-margin. *Hind-wing:* 2 black dots below costal nervure, one close to base, the other before middle; beyond middle, two nearly parallel, irregular rows of black dots, those of inner row larger, more irregularly placed.

"King William's Town, December 8th, 1860."—D'Urban, in litt.

Two damaged specimens in the South African Museum were forwarded from Butterworth, (Kaffraria,) by Mr. J. H. Bowker.

Genus Hesperia, Fab., Sws.

Hesperia Amaponda.

Exp. 1 in. 7 lin.—1 in. 9 lin.

♂ Dark-brown; with sub-vitreous, yellow-ochreous, transverse markings. *Fore-wing:* in basal portion, and along inner-margin, irrorated with dull-yellowish; a rather wide stripe, irregularly dentate externally and internally, from costa slightly before middle to sub-median nervure near anal angle, where it ends almost in a point; near apex, a parallel shorter band, touching neither costa nor hind-margin. *Hind-wing:* irrorated with yellowish scales, excepting along costa and hind-margin; at extremity of discoidal cell a sub-reniform spot. Cilia of fore-wing brown, of hind-wing yellow. Underside.—Paler; yellow markings as above, but with fewer scales than on upperside; a very limited yellowish irroration at bases. *Fore-wing:* a pale yellowish-grey space at anal angle, adjoining extremity of transverse band. *Hind-wing:*

spot at extremity of cell larger, more conspicuous; in cell, a more or less distinct, small, yellow spot.

♀. Similar, universally paler.

I have provisionally placed this handsome "skipper" under the genus *Hesperia;* but have little doubt that it will eventually be considered as the type of a new genus, combining as it does the characters of several Hesperideous genera. The palpi are porrect, rather obtuse at extremity, densely scaled, moderately hairy: the antennæ terminated by an angulated (not recurved) club. The fore-wings have the costa moderately arched at base, but slightly convex: the apex slightly acuminate; the hind-margin rather convex in middle, entire; the anal angle well indicated, though rounded; the inner-margin almost straight. The hind-wings present much the same characters, but the hind-margin is moderately dentate, and rather markedly prominent in its central portion. The legs are rather long and stout: the middle and hind tibiæ densely hairy, armed at extremity with a pair of conspicuous spurs; the fore-tibiæ very short, thickened at extremity.

"Forest on Hangman's Bush Hill, above Frankfort, March 28th, 1861; abundant."—D'Urban, in litt.

Mr. J. H. Bowker, who has recently forwarded the ♂ of this species from the Bashee River, Kaffraria, describes it as "solitary and rare; flies swiftly, often lighting with the wings open on the underside of the leaves of weeds and plants near the water."

Mr. D'Urban informs me that the ♂ *Amaponda* is in the Collection of the British Museum.

XXX. *A List of the Genera and Species belonging to the Family* Cryptoceridæ, *with Descriptions of new Species; also a List of the Species of the Genus* Echinopla. By Frederick Smith, Esq., Pres. Entom. Soc.

[Read 4th August, 1862.]

This paper contains a complete list of the species belonging to the various genera composing the family *Cryptoceridæ;* reference is made to every work in which figures of the species have appeared. In order to render the list as complete as possible, figures of new species, and also of such as have not been previously published, are now given; the new species are also described. Some of the insects included in the genera *Meranoplus, Cataulacus,* and also in *Echinopla,* have been described from unique examples, not in my own collection, and therefore not available for such minute examination as others of which several specimens have been obtained; probably hereafter, when the species occur more plentifully, and more thorough investigations are made, it may then be found necessary to separate some from the genera in which I have placed them. Should any case of this kind occur, I beg those Entomologists, who make such discoveries, to bear in mind, that the circumstance is solely attributable to the fact of their being more fortunate than myself in having at their command more ample materials, which enables them to pursue their investigations further than I could possibly do, possessing only unique specimens, frequently the property of public museums or of private individuals. I feel called upon to make these observations in consequence of some revisions having appeared of certain species of *Formicidæ,* described by myself, by a continental author who has overlooked this circumstance, and whose remarks convey the impression of my having disregarded standard authorities from a love of change, and fallen into error through carelessness of investigation. In 1853 I produced a Monograph of the *Cryptoceridæ,* which was published in the Transactions of this Society; since that time many new species have been discovered, and it has appeared to myself desirable that a new and complete list should be drawn up and published; such a list I have carefully prepared, and I hope it will prove as useful as I have endeavoured to make it.

In my former paper, published in the Transactions of the Society (Vol. II. N. S. pp. 213—228), I included the genus *Echinopla* in the family *Cryptoceridæ;* subsequent investigation has proved the necessity of removing it to the family *Formicidæ;* I have, however, thought it desirable to give a list of the known species, and figures of some, as none have been previously figured in the Society's Transactions.

Fam. FORMICIDÆ, Leach.

Sub-family Cryptoceridæ, Smith.

Sp. 1. *Cryptocerus atratus*, Latr. Hist. Nat. xiii. 260, tab. cii. fig. 1 ☿.
Smith, Trans. Ent. Soc. 2nd Ser. ii. 215, pl. xix. fig. 1 ♀; pl. xxi. fig. 2 ♂.
Hab. Brazil; Cayenne; Panama; Surinam. In Mus. Brit., &c.

Sp. 2. *Cryptocerus oculatus*, Spin. Mem. Accad. Torino, 2nd Ser. xiii. 65, 48 ☿.
——— *Æthiops*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 216, pl. xx. fig. 9 ☿.
Hab. Para; Ega. In Mus. Brit.

Sp. 3. *Cryptocerus serraticeps*, Smith, Cat. Hym. Ins. Form. p. 188, 3, pl. xi. fig. 7 ♀.
Hab. Ega. In Mus. Brit.

Sp. 4. *Cryptocerus clypeatus*, Fabr. Syst. Piez. 420 ☿.
Smith, Trans. Ent. Soc. 2nd Ser. ii. 217, pl. xxi. fig. 1 ♀; 2 ♂; 5, 6 ☿.
Perty, Del. An. Art. 136, tab. 27, f. 4 ☿.
(Pl. XII. fig. 3 ☿.)
Hab. Santarem (Brazil); South America. In Mus. Brit., &c.

Sp. 5. *Cryptocerus D'Orbignyanus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 218, pl. xix. fig. 5 ♀.
Hab. South America. In Coll. Westw.

Sp. 6. *Cryptocerus quadrimaculatus*, Klug, Ent. Monog. p. 215, 10.
Smith, Trans. Ent. Soc. 2nd Ser. ii. 219, pl. xix. fig. 8 ♀.
(Pl. XII. fig. 2 ☿.)
Hab. Para; Villa Nova; Ega. In Mus. Brit., &c.

Sp. 7. *Cryptocerus quadriguttatus*, Guér. Icon. Règ. Anim. 425 ☿.
Hab. Columbia; Bolivia; Brazil.

Sp. 8. *Cryptocerus argentatus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 218, pl. xix. fig. 7 ♀.
Hab. Columbia; Mexico; Brazil. In Brit. Mus., &c.

Sp. 9. *Cryptocerus angulatus*, Smith, Cat. Hym. Ins. Form. p. 194, pl. xii. fig. 4 ☿, minor.
(Pl. XII. fig. 1 ☿, major.)
Hab. Tunantins (Brazil). In Brit. Mus., &c.

Sp. 10. *Cryptocerus elongatus*, Klug, Ent. Monog. 214, 9 ☿.
(Pl. XII. fig. 8 ☿, and Pl. XIII. fig. 6 ♀.)
Hab. Santarem; Para; Rio. In Brit. Mus., &c.

Sp. 11. *Cryptocerus rimosus*, Spin. Mem. Accad. Torino, xiii. 65, 49 ☿.
Hab. Para.

Sp. 12. *Cryptocerus femoralis*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 219, pl. xx. fig. 3 ☿.
Hab. Brazil; Columbia. In Mus. Brit., &c.

Sp. 13. *Cryptocerus cordatus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 220, pl. xxi. fig. 3 ☿.
Hab. Santarem. In Mus. Brit.

Sp. 14. *Cryptocerus minutus*, Fabr. Syst. Piez. 425, 5 ☿.
Smith, Cat. Hym. Ins. Form. 190, 14, pl. xii. fig. 3 ☿, minor.
(Pl. XII. fig. 6 ☿, major.)
Hab. Villa Nova; Rio Janeiro; Panama. In Mus. Brit., &c.

Sp. 15. *Cryptocerus pusillus*, Klug, Ent. Monog. 202, 2.
Smith, Trans. Ent. Soc. 2nd Ser. ii. 220, pl. xx. fig. 8 ☿.
Hab. Santarem ; Para ; Rio Janeiro. In Mus. Brit., &c.

Sp. 16. *Cryptocerus obtusus*, Smith, Cat. Hym. Ins. Form. p. 191, pl. xii. fig. 12 ☿.
Hab. Santarem. In Mus. Brit.

Sp. 17. *Cryptocerus Pinelii*, Guér. Icon. Règ. Anim. p. 425.
Hab. Moro-Gueimado (Brazil).

Sp. 18. *Cryptocerus complanatus*, Guér. Icon. Règ. Anim. 425 ☿.
Hab. Cayenne.

Sp. 19. *Cryptocerus Pavonii*, Latr. Gen. Crust. et Ins. iv. 132 ☿.
Hab. South America.

Sp. 20. *Cryptocerus discocephalus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 222, pl. xx. fig. 2 ☿.
Cat. Hym. Ins. Form. p. 191, pl. xi. fig. 1 ♂; 2 ☿ major; 3 ☿ minor.
Hab. Villa Nova. In Mus. Brit., &c.

Sp. 21. *Cryptocerus causticus*, Pohl. and Kollar, Braz. Ins. p. 17, fig. 12 ☿.
Hab. Brazil.

Sp. 22. *Cryptocerus elegans*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 222, pl. xix. fig. 3 ☿.
Hab. Villa Nova ; Ega ; Santarem. In Mus. Brit., &c.

Sp. 23. *Cryptocerus depressus*, Klug, Ent. Monog. p. 204, 4 ☿.
Hab. Rio Janeiro. In Mus. Berl.

Sp. 24. *Cryptocerus membranaceus*, Klug, Ent. Monog. p. 208, 7.
Smith, Trans. Ent. Soc. 2nd Ser. ii. 217, pl. xxi. fig. 4 ☿.
(Pl. XII. fig. 9 ☿.)
Hab. Rio ; Tejuca. In Mus. Brit., &c.

Sp. 25. *Cryptocerus pallens*, Klug, Ent. Monog. 206 ☿.
Hab. Brazil. In Mus. Berl.

Sp. 26. *Cryptocerus umbraculatus*, Fabr. Syst. Piez. p. 420 ♀.
Hab. Bahia, S. America. In Mus. Berl.

Sp. 27. *Cryptocerus unimaculatus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 221, pl. xix. fig. 9 ☿.
Hab. Brazil. In Coll. Smith.

Sp. 28. *Cryptocerus hæmorrhoidalis*, Latr. Hist. Nat. Fourm. p. 276 ☿.
Hab. St. Domingo.

Sp. 29. *Cryptocerus araneolus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 223, pl. xix. fig. 4 ☿.
Hab. St. Vincent's. In Coll. Smith.

Sp. 30. *Cryptocerus placidus*, Smith, Journ. Entom. i. 76, 3 ♂. (Pl. XII. fig. 4 ♂.)
Hab. St. Paul. In Mus. Brit.

Sp. 31. *Cryptocerus laminatus*, Smith, Journ. Entom. i. 76, 4, pl. iv. fig. 4 ☿.
Hab. Ega. In Mus. Brit.

Sp. 32. *Cryptocerus grandinosus*, Smith, Journ. Entom. i. 76, 5, pl. iv. fig. 5 ☿.
Hab. Ega. In Mus. Brit.

Sp. 33. *Cryptocerus bimaculatus*, Smith, Journ. Entom. i. 77, 6, pl. iv. fig. 4 ♀.
Hab. Mexico. In Mus. Brit.

Sp. 34. *Cryptocerus cognatus.*

C. aterrimus, thorace antice posticeque spinoso, elongatus, abdomine flavo-quadrimaculato.

Female.—Length 2½ lines. Head obscurely ferruginous above, black beneath; the mandibles obscure ferruginous; the antennæ fusco-ferruginous, with the scape and the base and apex of the flagellum rufo-testaceous; the tips of the femora, tibiæ, and tarsi ferruginous; the abdomen elongate, half the length of the

insect, deeply emarginate at the base, the lateral angles of its base with a large yellow spot, and a large ovate yellow spot on each side towards the apex of the first segment. The wings ample, fusco-hyaline; the nervures testaceous; the stigma brown. The head and thorax rather strongly punctured; the abdomen very delicately shagreened, and with a few fine scattered punctures. The anterior and posterior angles of the thorax with short spines, the anterior pair acute. (Pl. XIII. fig. 4.)

Hab. Ega, on the Amazon. In Coll. Smith.

This species closely resembles the *C. quadrimaculatus*, but it is considerably smaller; on a comparison with examples of that species the following differences present themselves: the head is of a different colour and much more oblong, the sides being much more straight; the thorax is more elongate, and the metathorax has at its base, on each side, a small angular tooth; its thorax and abdomen are sub-opake, in *C. 4-maculatus* they are shining.

Genus Meranoplus, Smith.

Sp. 1. *Meranoplus petiolatus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 224, pl. xx. fig. 7 ☿.

Hab. Brazil. In Coll. Smith.

Sp. 2. *Meranoplus bicolor*, Guér. Icon. Règ. Anim. 425. Smith, Trans. Ent. Soc. 2nd Ser. ii. 224, pl. xx. fig. 6 ☿.

Hab. India; Ceylon. In Coll. Smith.

Sp. 3. *Meranoplus cordatus*, Smith, Proc. Linn. Soc. ii. 82, pl. ii. fig. 5 ☿.

Hab. Borneo (Sarawak). In Coll. Saunders.

Sp. 4. *Meranoplus mucronatus*, Smith, Proc. Linn. Soc. ii. 82, pl. ii. fig. 6 ☿.

Hab. Borneo. In Coll. Saunders.

Sp. 5. *Meranoplus castaneus*, Smith, Proc. Linn. Soc. ii. 81, pl. ii. fig. 7 ♀.

Hab. Borneo. In Coll. Saunders.

Sp. 6. *Meranoplus gracilis*, Smith, Cat. Hym. Ins. Form. p. 194, 6, pl. xii. fig. 7 ☿.

Hab. Brazil. In Mus. Brit.

Sp. 7. *Meranoplus difformis*, Smith, Cat. Hym. Ins. Form. p. 195, pl. xii. fig. 8 ☿.
Hab. Santarem. In Mus. Brit.

Sp. 8. *Meranoplus striatus*, Smith, Journ. Entom. i. 77, 1, pl. iv. fig. i. ☿.
Hab. St. Paul (Brazil). In Mus. Brit.

Sp. 9. *Meranoplus subpilosus*, Smith, Journ. Entom. i. 78, pl. iv. fig. 2 ☿.
(Pl. XIII. fig. 7 ☿.)
Hab. St. Paul (Brazil). In Mus. Brit.

Sp. 10. *Meranoplus spinosus*, Smith, Proc. Linn. Soc. iii. 150 ☿.
(Pl. XIII. fig. 5 ☿).
Hab. Aru. In Coll. Saunders.

Sp. 11. *Meranoplus armatus.*

M. capite thoraceque ferrugineis, abdomine nigro; thorace quadrato, angulis singulis spina acuta armatis.

Worker. Length 1½ lines.

The head, antennæ, thorax and legs ferruginous, the tarsi and antennæ palest; the head reticulated; the eyes black and prominent. Thorax short, sub-quadrate; the anterior margin slightly rounded, the lateral angles with a stout bifurcate spine, the posterior tooth much smaller than the anterior one; at each of the posterior angles are two stout, equal, slightly curved spines; the thorax is coarsely punctured above. The nodes of the abdomen coarsely rugose, the anterior node with a short acute spine on each side at its base. Abdomen black, smooth and round, slightly emarginate at the base, moderately convex. (Pl. XII. fig. 7 ☿.)

Hab. Sumatra. In Coll. Smith.

This insect, which is somewhat mutilated, was given to me along with other species of ants, by a friend who took a few insects at Celebes and also at Sumatra; all the ants he believed were from the latter locality.

Sp. 12. *Meranoplus pubescens*, (Cryptocerus pubescens,) Smith, Trans. Ent. Soc. 2nd Ser. ii. 223, pl. xx. fig. 4 ☿.
Hab. Adelaide. In Coll. Smith.

It will be found on reference to my Monograph, page 214, that

I included this insect in the genus *Cryptocerus*, with some hesitation; on a more careful examination, and also an examination of another species from Australia, I have satisfied myself that it belongs to the genus *Meranoplus*.

Sp. 13. *Meranoplus oceanicus*.

M. castaneo-rufus; capite thoraceque longitudinaliter striatis; thorace subquadrato, angulis anticis subspinosis; metathorace quadrispinoso; abdomine cordato.

Worker. Length 2 lines. Chestnut-red; the eyes black and prominent; the head narrowed anteriorly and slightly emarginate, rounded posteriorly; covered with a longitudinal raised striation, the interstices very delicately shagreened. Thorax sub-quadrate, with an irregular longitudinal raised striation, the interstices shagreened; the anterior margin rounded, the angles acute; the lateral margins slightly raised, with a tooth a little beyond the middle; the posterior angles produced into acute spines, and the posterior margin has also two short teeth or spines in the middle. The abdomen heart-shaped, the nodes rugose, the first with a spine on each side, on the thorax, at its insertion; the head, thorax and abdomen with scattered erect hairs. (Pl. XII. fig. 5 ☿.)

Hab. Moreton Bay. In Mus. Brit.

Genus Cataulacus, Smith.

Sp. 1. *Cataulacus Taprobanæ*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 225, pl. xx. fig. 10 ☿.
Hab. Ceylon. In Coll. Westw.

Sp. 2. *Cataulacus Guineensis*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 225, pl. xx. fig. 5 ☿.
Hab. Tropical Western Africa. In Coll. Westw.

Sp. 3. *Cataulacus parallelus*, Smith, Trans. Ent. Soc. 2nd Ser. ii. 226, pl. xix. fig. 6. ☿.
Hab. Cape of Good Hope. In Coll. Smith.

Sp. 4. *Cataulacus granulatus*, Latr. Hist. Nat. Fourm. p. 275, tab. 12, fig. 75.
Hab. India.

Sp. 5. *Cataulacus horridus*, Smith, Proc. Linn. Soc. ii. 81, pl. ii. fig. 3 ☿.
Hab. Borneo. In Coll. Saunders.

Sp. 6. *Cataulacus reticulatus*, Smith, Proc. Linn. Soc. ii. 81, pl. ii. fig. 8 ☿.
Hab. Borneo. In Coll. Saunders.

Sp. 7. *Cataulacus insularis*, Smith, Proc. Linn. Soc. ii. 80, pl. ii. fig. 4 ♀.
Hab. Borneo. In Coll. Saunders.

Sp. 8. *Cataulacus setosus*, Smith, Proc. Linn. Soc. v. 114, pl. i. fig. 7 ☿.
Hab. Bachian; Mysol; Waigiou. In Coll. Saunders.

Sp. 9. *Cataulacus flagitiosus*, Smith, Proc. Linn. Soc. vi. 49, 1 ☿. (Pl. XIII. fig. 2 ☿.)
Hab. Celebes. In Coll. Saunders.

Genus Ceratobasis, Smith.

Sp. 1. *Ceratobasis singularis*, Smith, Journ. Entom. i. 78, pl. iv. figs. 12, 13 ♀.
Meranoplus singularis, Smith, Cat. Hym. Ins. Form. p. 195, pl. xiii. figs. 6—10 ☿.
Hab. Brazil. In Mus. Brit.

Family FORMICIDÆ, Leach.

Genus Echinopla, Smith.

In the Journal of Proceedings of the Linnæan Society, in 1857, I first characterized the genus *Echinopla*: at that time it appeared to me to possess many characters in common with some of the ants comprising the family *Cryptoceridæ*, particularly that of the first abdominal segment concealing all the following segments. Having had opportunities of carefully examining a number of specimens of the seven species now known, I have satisfied myself that the true situation of the genus *Echinopla* is near to, perhaps following, the genus *Polyrhachis* in the *Formicidæ*. I have thought it desirable to publish a list of all the species at present known to me, and also to give figures of each, in order to facilitate their identification. Some of the species are described from unique examples in the Saundersian Collection; hereafter, when numerous examples may

be obtained, and an opportunity offers further facilities for anatomical investigation, it may be found desirable to separate some of the species, and to form sub-genera for their reception.

Genus Echinopla, Smith.

Sp. 1. *Echinopla melanarctos*, Smith, Proc. Linn. Soc. ii. 79, pl. i. fig. 25 ☿.
(Pl. XIII. fig. 9 ☿.)
Hab. Borneo. In Mus. Brit., &c.

Sp. 2. *Echinopla pallipes*, Smith, Proc. Linn. Soc. ii. 80, 2 ☿.
(Pl. XIII. fig. 3 ☿.)
Hab. Borneo; Celebes. In Mus. Brit., &c.

Sp. 3. *Echinopla striata*, Smith, Proc. Linn. Soc. ii. 80, 3 ☿.
(Pl. XIII. fig. 8 ☿.)
Hab. Malacca; Celebes; Ceram. In Mus. Brit., &c.

Sp. 4. *Echinopla prætexta*, Smith, Proc. Linn. Soc. v. 113, pl. i. fig. 5 ☿.
(Pl. XIII. fig. 1 ☿.)
Hab. Bachian. In Coll. Saunders.

Sp. 5. *Echinopla dubitata*, Smith, Proc. Linn. Soc. vi. 50 ☿.
Hab. Celebes. In Coll. Saunders.

Sp. 6. *Echinopla nitida*, Smith, Proc. Linn. Soc. vii.
(Pl. XIII. fig. 10 ☿.)
Hab. Ceram. In Coll. Saunders.

Sp. 7. *Echinopla deceptor*, Smith, Proc. Linn. Soc. vii.
Hab. Boroo. In Coll. Saunders.

XXXI. *Descriptions of new East-Asiatic Species of* Haliplidæ *and* Hydroporidæ. By the Rev. Hamlet Clark, M.A., F.L.S.

[Read 6th Oct. 1862.]

The insects described in this Paper have either been received by me during the last few years through Mr. Stevens, or communicated by the kindness of Mr. Bowring. Mr. Henry Adams, who has spent several years on the coast of China, has also contributed interesting species; his collection is singularly rich in this group, and proves how that, with even few opportunities, additions that are most important may be made to local faunas by travellers: Mr. Bowring's collection contains many new and interesting minute forms from Java.

Tribus I. HALIPLIDES.

Genus 1. Haliplus, Lat.

1. *Haliplus variabilis*, n. sp.

Ovatus, sat latus, apicè subacuminatus, fortiter et crebrè punctatus, testaceus, elytris nigro-maculatis; capite subproducto, ad basin antennarum transversè depresso, subpunctato, rufo, ad basin maculis duabus rufis; thorace lateribus subrotundatis, obliquis, basi ad medium latè angulato, subtiliter punctato, ad apicem et basin punctorum seriebus ornato, ad basin etiam foveolis duabus nigris; elytris punctato-striatis, punctis nigris ad dorsum latis, ad apicem parvis, octo-maculatis, unâ undique ante medium, duabus mediis, unâ post medium; corpore subtus testaceo, antennis flavis, pedibus flavis, tarsorum posticorum articulis nigris.

Long. corp. $1\frac{4}{5}$ lin.; lat. lin. 1.

In the maculations of the elytra this species is subject to considerable variety; in most of the examples before me there are on each elytron four regularly disposed circular markings; in others the two adjoining the suture together form one; in others the apical portion of the elytra is more or less partially fuscous-black; while in others, throughout the whole surface, the different markings are entirely absent.

The species is a common one, and has an extensive range: I

have, by the kind liberality of Mr. Arthur Adams, received a series both from the Corea and from Canton.

Mr. Bowring has taken it near Amoy.

2. H. pulchellus, n. sp.

Ovatus, apicè attenuatus, nigro-punctatus, pallidè testaceus, lineâ a capite ad apicem latâ mediâ inæquali, maculisque minutis ad elytra nigris; capite sparsim punctato, ad basin antennarum transversè foveolato, rufo vel rufo-fusco; thorace lateribus obliquis subrotundatis, basi sinuato, punctato, medio vittâ subtriangulari nigrâ; elytris punctis sat parvis nigris ordine dispositis, basi mediâ vittâque suturali, maculisque undique minutis parvis nigris, vittâ ante medium iterumque post medium latiori; corpore subtus pallidè flavo, pedibus antennisque rufis.

Long. corp. lin. $1\frac{1}{2}$; lat. lin. $\frac{2}{3}$.

The medial longitudinal marking, which so strikingly designates this species, slightly varies in form; in all examples before me it is broader near the middle, and also near the apex, differing somewhat in outline and in breadth.

Mr. Bowring has received two specimens from Siam, and Mr. Wallace has taken the species near Malacca.

3. H. eximius, n. sp.

Elongato-ovalis, sat convexus, ad apicem acuminatus, striato-punctatus, rufus; capite infra antennarum basin transversè depresso, leviter punctato; thorace anticè emarginato, lateribus rectis, obliquis, basi sinuato fortiter sed sparsim punctato, elytris elongatis, striato-9-punctatis, interstitiis etiam leviter striato-punctatis, corpore subtus rufo-fusco, pedibus antennisque rufis.

Long. corp. lin. $1\frac{3}{5}$; lat. lin. $\frac{4}{5}$.

In form and colour generally *H. eximius* much resembles *H. rubidus*, Perris (= *perforatus*, Schaum), from the Pyrenees: the thorax of the species before us is broader at the base, more contracted towards the front, and less closely punctate; the elytra are the same in form (a trifle narrower and more acuminated); the interstices between the rows of punctures have each of them *a row of similarly arranged but smaller punctures* (the similar interstitial punctures in *H. rubidus* being more interrupted).

Two examples of this species were taken in a pond on Deer

Island, Tsau-li-an, Korea, by Mr. A. Adams, and by him kindly placed in my collection.

4. *H. simplex*, n. sp.

Ovalis, convexus, ad apicem subacuminatus, testaceus, punctis maculisque nigris; capite sparsim punctato, fulvo, ad basin transversè fusco; thorace anticè haud emarginato, lateribus rectis (haud rotundatis), obliquatis, basi sinuato, sparsim et fortiter punctato, flavo; elytris 9 punctato-striatis (punctis frequentibus, sat magnis, nigris), interstitiis sparsissimè punctatis ad latera undique maculis tribus infuscatis, ad mediumque unâ plus minus transversâ, corpore subtus punctato, flavo; pedibus rufo-fuscis, antennis rufis.

Long. corp. lin. 1; lat. lin. $\frac{2}{3}$.

The thorax of *H. simplex* is immaculate, the base and apex being sparingly punctate; the elytra have nine rows of large and closely arranged punctures, the interstices being also sparingly punctate; these punctures are black, the margins of the punctures being somewhat suffused; near the sides this suffused black colouring of the punctures is ante-medially, post-medially, and nearer the apex more confluent; thus forming three indeterminate infuscations; a similar cloudy marking is formed transversely near the middle.

A single example of this species is in my collection, taken by Mr. A. Adams, in a pond on Deer Island, Tsau-li-an, Korea.

Tribus II. HYDROPORIDÆ.

Genus 1. Hyphidrus, Illig.

1. *H. orientalis*, n. sp.

Ovatus, brevis, crassus, suprà modicè convexus, fortiter punctatus, punctato-striatus, rufus, nigro-notatus; capite anticè marginato, sparsim punctato, rufo; thorace anticè emarginato, lateribus apicem versus contractis, haud rotundatis, marginatis, basi latè ad medium angulato, fortiter punctato presertim ad basin, rufo, ad mediam basin nigro-binotato; elytris robustis, brevibus, leviter unistriatis, fortiter punctatis, rufis, suturâ vittâ irregulari antè medium alterâque post medium inæqualibus undulantibus nigris, vittâ anteriori interdum ad medium elytri interruptâ, vittâ posticâ sæpius ad suturam maculam nigram undique continenti, arcuatâ; suturâ inter

vittas latè nigricanti; macula ad humeros et apice nigris; corpore subtus rufo; antennis pedibusque rufo-fuscis.

Long. corp. lin. 2; lat. lin. $1\frac{1}{4}$.

Among six examples before me there is but little variation in pattern, and none whatever in form or size: in the elytra the form of the anterior transverse band is inconstant, in some examples it is broader, and again it is occasionally interrupted in the middle; in the latter case presenting a short medial fascia and lateral insular marking. The species differs from *H. pulchellus* by its slightly less rounded form; *H. orientalis*, when seen from above, presents a very obtuse though manifest angle between the sides of the thorax and the elytra; in *H. pulchellus* the line is more rounded and entirely continuous: from *H. eximius* it is separated by its pattern: from both species also by its considerably larger size.

The examples of *H. orientalis* are all from the cabinet of Mr. Bowring, and are all labelled "Amoy."

2. *H. pulchellus*, n. sp.

Subovatus, subrotundatus, brevis, suprà modicè depressus, punctato-striatus, fortiter punctatus, rufus, nigro-ornatus; capite anticè marginato, subtiliter punctato, rufo; thorace anticè emarginato, lateribus obliquatis, haud rotundatis, tenuè marginatis, basi latè ad medium angulato, fortiter sed inæqualiter punctato, fusco, ad latera latè rufo vel flavo-rufo; elytris rufo-flavis, suturâ vittâ latâ mediâ, maculâque ad apicem communi triangulari nigris, vittâ mediâ irregulari, maculâque apicali grandi, communi, et confusè definitâ; ad humeros macula nigra inconspicua latet; corpore subtus, pedibus, antennisque rufo-fuscis.

Long. corp. lin. $1\frac{3}{5}$; lat. lin. 1.

In this species the margin of the thorax is in the same continuous line (when seen from above) as that of the elytra; in pattern it resembles generally the last species, the broad black fascia of the elytra does not extend to the margin, its outline is irregular and interrupted, being generally broader as it approaches the margin; the suture below the fascia is broadly black; the apex is almost entirely occupied by a triangular marking of black, which leaves only a narrow and unevenly-bounded margin.

A specimen of this species was taken by Mr. Bowring, labelled "Amoy."

3. *H. eximius*, n. sp.

Breviter ovatus, latus, supernè haud convexior, punctato-striatus, fortiter punctatus, rufo-flavus, nigro ornatus; capite anticè marginato, inter oculos undique depresso, leniter punctato, rufo, ad basin fusco adumbrato; thorace anticè emarginato, lateribus obliquis, haud rotundatis, marginatis, basi ad medium latè angulato; disco multi-punctato punctis magnis etiamque crebrius minutis, rufo-flavo, ad mediam basin et maculis duabus juxta basin nigro; elytris robustis, ad apicem subacuminatis, punctato-unistriatis, ut in thorace punctatis, rufo-flavis; suturâ, vittâ transversâ (haud dubito) mediâ, ad apicem plagâ communi, et ad humeros macula parva nigris; corpore subtus, antennis, pedibusque rufo-fuscis.

Long. corp. lin. 2; lat. lin. $1\frac{1}{3}$.

There is a general resemblance among these three first species of the genus; but each, as I have before noted, may readily be separated. The punctuation of this species somewhat differs from that of the preceding; it consists of larger punctuations, between which are more minute punctures: the pattern of the markings of the elytra resembles much that of *H. pulchellus*, the transverse fascia (in the single example before me represented by a shorter band and a lateral insulated marking of black) is narrower; two sub-circular, adjacent, flavous spots are well defined, one on either side of the suture in the midst of the triangular basal marking of fuscous. In size this species corresponds with *H. pulchellus*, in form it resembles *H. orientalis*.

I have a single example in my cabinet, which I obtained some years ago from Mr. Stevens, received by him from China.

4. *H. nigro-notatus*, n. sp.

Ovatus, latus, crassus, supra haud convexior, punctato-striatus, crebrè punctatus, nitidus, rufus, nigro-notatus; capite ad apicem marginato, inter oculos undique depresso, ad basin leviter punctulato, rufo-flavo; thorace anticè excavato, lateribus obliquis rectis tenuè marginatis, basi ad medium angulato, crebrè punctato, rufo-flavo, cum duabus maculis ad medium basalibus, vel rufo-flavo basi nigrâ, vel omnino nigro-fusco; elytris latis, unistriatis, crebrè punctatis, rufis, suturâ et undique lineâ parallelâ nigris, apice latè nigro; corpore subtus fusco vel rufo, pedibus antennisque rufis.

Long. corp. lin. 2; lat. lin. $1\frac{1}{3}$.

This species may readily be distinguished from *H. orientalis*, not only by the difference of its pattern, but also by its form and sculpture. *H. nigro-notatus* is a trifle more oblong, not so broadly rounded; the thorax is distinctly longer, and the punctures are not irregular in depth and breadth as in that species, but closely arranged and entirely similar; it differs also in form from the preceding species, being perceptibly more elongate: one example of the five before me has the markings on the elytra almost entirely obliterated.

From the Collection of Mr. Bowring.

5. H. bisulcatus, n. sp.

Ovatus, brevis, suprà sat convexus, crebrè punctatus, punctato-striatus, cinereus vel pallidè cinereus, nigro-lineatus; capite ad apicem marginato et inter oculos subdepresso, leviter punctato, testaceo; thorace anticè emarginato, lateribus obliquis haud rotundatis marginatis, basi haud sinuato, latè ad medium marginato, leniter subpunctato, lateribus undique tenuiter fuscis, ad basin undique ad medium nigro-adumbratis, lateribus latis, undique bistriatis, striis haud punctatis, crebrè punctatis, cinereis, suturâ, basi, marginibus juxta apicem lineisque duabus nigris; lineâ ad marginem tenui brevi, ad suturam latâ inæquali apicem versus ampliatâ; corpore subtus flavo-rufo; pedibus et antennis cinereis vel rufo-cinereis.

Long. corp. lin. 2; lat. lin. $1\frac{1}{4}$.

It is probable that the markings of this species may be subject somewhat to variation; but it is sufficiently characterized by the four impunctate striæ on the elytra; the markings of the elytra consist of two longitudinal fuscous lines, neither of them extending to the base or the apex; the line nearer the suture is irregular in form and towards the apex widens into a broad macula, in the midst of which is sometimes an insulated flavous marking, the line near the margin is narrower and regularly formed, extending to the apical macula. The especial character of the species, however, is a deeper sulcation, slightly curved and post-medial, in the stria which is nearer the margin; this, when seen obliquely, is considerably deeper and more apparent than the stria of which it forms a part.

This species has been taken by Mr. Wallace near Malacca.

6. *H. rufus*, n. sp.

Ovatus, brevis, crassus, corpore suprà convexiusculo, valdè punctato, rufo, nigro-lineato; capite anticè marginato, punctato, thorace anticè emarginato, ad latera obliquato (subrotundato) tenuè marginato, ad basin sinuato, et ad medium latè angulato, punctato, rufo, ad basin plus minus fusco-adumbrato; elytris latis, brevibus, densè et fortiter punctatis, suturâ et quatuor lineis nigris, parallelis, aliquando obscuris, interdum post medium breviter interruptis; corpore subtus valdè punctato, rufo; antennis pedibusque rufis.

Long. corp. 2 lin.; lat. $1\frac{1}{3}$ lin.

The only tendency to variation that I can trace in this species is the comparative obliteration of the longitudinal lines on the elytra; the dark-red colour pervades the whole of the surface, so as to render the markings somewhat obscure; in two examples the lines are interrupted behind the middle.

Examples of this species are in Mr. Bowring's Collection. From the coast of China.

7. *H. rufo-niger*, n. sp.

Ovatus, brevis, latus, sparsim punctatus, punctato-striatus, nitidus, niger; capite inter oculos undique depresso, impunctato, rufo; thorace anticè vix emarginato, lateribus obliquis, haud rotundatis, basi ad medium latè angulato, tenuiter punctato, nigro-rufo; elytris marginibus cum thoracis lateribus vix angulum formantibus, punctatis, bistriatis, interstitiis sparsissimè punctatis, nigris vel rufo-nigris, nitidis; corpore subtus, antennis pedibusque rufis.

Long. corp. lin. $1\frac{2}{3}$; lat. lin. $\frac{4}{5}$—1.

From China, taken by Mr. Bowring. I have also before me a single specimen from Mr. Bowring's Collection, labelled as from Java.

Genus 2. Hydroporus, Clairv.

§ A. Thorace haud longitudinaliter striato.

1. *H. carbonarius*, n. sp.

Ovalis, penitus circularis, depressus, punctatus, carbonarius, nitidus; capite subtilissimè punctato, rufulo; thorace anticè emarginato, lateribus obliquis rotundatis, basi subsinuato, ad medium latè angulato, punctato, punctis crebris et distinctis,

nigro, ad latera subrufulo; elytris brevibus, haud punctato-striatis, punctatis; ad latera obscurè marginatis, nigris, corpore subtus rufo-fusco: antennis pedibusque rufis.

Var. Fusco-brunneus, insulam Javam habitat.

Long. corp. 1 lin.; lat. $\frac{4}{5}$ lin.

This species in form is almost circular, of a bright, shining, black colour throughout, the head and the thorax only being tinged with rufous; the punctures are a trifle larger and more thickly disposed on the thorax than on the elytra; on the latter they are irregular and more minute, there being no trace of any striæ-like rows.

H. carbonarius is in the same section as *Hydroporus* (*Hydro-ovatus*, Motsch.) *obtusus*, Motsch., from India, which it nearly resembles: it is broader, less oblong, very slightly and not decidedly acuminated at the apex; it is more closely allied still with (though entirely distinct from) a species from N. York, which I have received as *H. convexus* of Aubé; as this name, however, seems to be indiscriminately applied to two or three N. American species, and is involved in doubt which I am not at present able to clear up, I need not more fully point out the distinctions.

The above diagnosis is drawn up from an example which Mr. E. Adams took in Danes Island, China, in 1848.

I have received examples from Mr. Bowring, from Java, which, though slightly different in some details, I refer with hesitation to this species (pro tempore, at least,) as a variety; the colour is fuscous, or rufo-fuscous, rather than black.

2. *H. badius*, n. sp.

Breviter ovatus, latus, sat depressus, punctulatus, nitidus, rufo-ferrugineus; capite inter oculos undique longitudinaliter depresso, impunctato, rufo; thorace anticè emarginato, lateribus subrotundatis obliquis, basi rectilineari, haud sinuato, ad medium latè angulato punctato; elytris brevibus, ad humeros cum thoracis margine haud angulum formantibus, punctatis; corpore subtus, pedibus, antennisque rufis.

Long. corp. lin. 1; lat. lin. $\frac{3}{5}$.

Four examples in my cabinet correspond exactly in punctuation and size: I may notice that this species, as well as other Asiatic species of *Hyphidrus*, shows that the limits of these two genera approach most closely each other; the distinguishing characteristic is found in the length, as compared with the breadth, of the joints of the anterior (dilated) tarsi of the male. In *H. badius*, manifestly

a *Hydroporus*, and of a subsection which has representatives nearly all over the world, the tarsi, by themselves, would almost determine it to be a *Hyphidrus:* I have seen, on the other hand, species of *Hyphidri*, which, if their position were decided by the form of their tarsi, would perhaps be grouped among the *Hydropori*. In *Hydrocantharidæ* at least (and in other families also), it is *the general facies* of an insect, although it may be difficult to express this in the exact terms of a critical diagnosis, which is a more truthful guide as to its natural position than either the joints of the tarsi or the structure of the mouth or *any single separate organ*, if considered by itself and without reference to the rest. The species before us nearly resembles *H. Malaccæ;* without close microscopic examination (which is absolutely necessary for the determination of all these minute species), it would perhaps be not easy to separate them; the thorax (longitudinally and medially) is deeper; that is, the angle of its base at the scutellary region is more acute, the anterior portion of the thorax is more distinctly punctate, the apex is less acuminated, and the lateral margin of the thorax is in one continuous line with that of the elytra; when viewed *laterally*, the outline of the shoulders is more rounded, and forms a more marked angle with the sides of the thorax.

Taken by Mr. Adams in Danes Island, on the coast of China, and by him kindly presented to my collection.

3. *H. Malaccæ*, n. sp.

Breviter ovatus, rotundatus, sat depressus, punctatus, fusco-rufus, nitidus; capite ad apicem leviter marginato, intra oculos undique foveolato, impunctato, rufo; thorace lateribus subrotundatis, basi ad medium angulato, punctato, anticè rarius: elytris sat latis, sensim acuminatis, punctatis; corpore subtus, antennis, pedibusque rufis.

Long corp. lin. 1; lat. lin. $\frac{4}{5}$.

The only species known to me which this insect resembles is *H. badius*, from China: from this (though very closely resembling it) it may be separated by several distinctive features: when viewed laterally the margin of the shoulders in this species is more contracted, less rounded: there is a slight, though perceptible angle formed by the margin of the thorax and elytra, which does not exist in *H. badius*. The apex of the elytra is manifestly more elongate, and the punctuation also differs of the thorax.

The species has been taken by Mr. Wallace, near Malacca.

4. *H. aberrans*, n. sp.

Breviter ovatus, latus, parallelus, fortiter punctato-striatus, punctatus, testaceus, rufo-fusco notatus; capite leviter punctato, rufo-fusco; thorace anticè vix emarginato, lateribus rotundatis, basi pene transverso, crebrè punctato, testaceo, ad medium fusco adumbrato; elytris sat latis, fortiter undique striis punctatis octo latis ornatis, punctatis, testaceis, lineis tribus rufo-fuscis a basi ad apicem, subparallelis; corpore subtus fusco, antennis pedibusque rufo-flavis.

Long corp. lin. $\frac{4}{5}$; lat. lin. $\frac{1}{2}$.

The only example that I have been able to examine of this species is an imperfect one received by Mr. Bowring, from Java: it presents very sufficient and striking characters; the form of the insect is short and parallel; the sides of the thorax are much rounded, compressed at the anterior and posterior angles; the elytra are marked by eight deep striæ, formed by closely arranged broad punctures; in colour the surface is testaceous, the interstices between the 1st and 2nd, the 3rd and 4th, the 5th and 6th striæ being *irregularly* rufo-testaceous.

5. *H. pudicus*, n. sp.

Ovalis, sat latus, et convexus, punctulatus, haud striato-punctatus, rufus; capite pallidè rufo, oculis magnis, impunctato; thorace anticè emarginato, lateribus tenuè marginatis, basi ad medium latè angulato, impunctato, rufo, ad basin fusco-rufo; elytris convexis, robustis, punctulatis, rufis vel fusco-rufis; pedibus, antennis, corporeque subtus rufis.

Long corp. lin. 1; lat. lin. $\frac{1}{2}$.

H. pudicus is very nearly allied to *H. rubescens:* without careful examination the two species may be confounded together: the insect before us is altogether more robust, broader and not so long; the thorax is differently formed, being more narrowly transverse; the angle of the basal line near the scutellum is more distinct, and the margin of the thorax (*when viewed laterally*) is shorter, more in a line with the axis of the insect, and forming a much more obtuse angle with the shoulders of the elytra.

A single example before me was received by Mr. Bowring, from Java.

6. *H. rubescens*, n. sp.

Oblongo-ovalis, subtiliter punctatus, striato-punctatus, rufo-ferrugineus, nitidus; capite impunctato, rufo; thorace anticè,

fortiter emarginato, lateribus subrotundatis basi pene recto, transverso, rufo; elytris parallelis, ad apicem subacuminatis, leviter striato-punctatis, rufo-ferrugineis; corpore subtus, pedibus antennisque rufis.

Long corp. lin. 1; lat. lin. $\frac{1}{2}$.

A pretty and well defined species, elongate rather than subglobose, with elytra more parallel than in the preceding species; the punctures on the elytra are more distinct, the thorax is less transverse, its basal margin consisting rather of a straight transverse line than of an angle; the whole body is more depressed, the margins of the elytra being close to the paper on which it is gummed, as compared with those of the preceding species; the colour also of the elytra is darker; from other Eastern species it may be distinguished (so far as they are already known) by the absence of any longitudinal striæ at the base of the thorax or the shoulder of the elytra.

Received by Mr. Bowring, from Java.

7. *H. tenellus*, n. sp.

Oblongo-ovalis, attenuatus, apicè acuminatus, rufo-flavus, impunctatus, nitidus; capite rufo, impunctato; thorace latè transverso, anticè subemarginato, lateribus sat rotundatis, leviter marginatis, basi (supernè viso) transverso, flavo, maculis transversis ad apicem obscurè rufo-flavis; elytris ad humeros thorace haud latioribus, ad apicem acuminatis, impunctatis, rufo-flavis, ad margines flavis; pedibus, antennis et corpore subtus flavis.

Long corp. lin. $\frac{3}{5}$; lat. $\frac{3}{10}$ lin.

One of the smallest species of *Hydroporus* with which I am acquainted: in its oblong-ovate form it resembles much an elongate *Laccophilus;* the outline of the marginal line extends without any interruption or angle in one continuous curve from the head to the apex: its elongated form abundantly separates it from the preceding species of this subsection, while the absence of thoracic foveæ removes it from other species of the genus to which in form it is allied.

A single example was received by Mr. Bowring, from Java.

§ B. Thorace stria longitudinali vel obliqua haud elytris continuata.

8. *H. orientalis*, n. sp.

Oblongo-ovalis, subparallelus, post medium paululum latior,

punctatus, rufo-fuscus ; capite inter oculos undique transversè foveolato, rufo-flavo ; thorace anticè emarginato, lateribus subrotundatis obliquatis, basi subsinuato, ad medium leviter angulato, crebrè punctato, rufo-flavo ad basin transversè ad medium fusco, striis ad basin brevibus obliquatis ; elytris ad latera angulum obtusissimum cum thoracis margine formantibus, sat elongatis, ad apicem subacuminatis, undique suturam juxta striatis, crebrè punctatis, rufo-fuscis, maculâ undique transversâ subtriangulari, (ante medium, suturam haud attingenti,) vittâque ad marginem usque ad apicem flavis ; pedibus, antennis, corporeque subtus flavis, vel rufo-flavis.

Long corp. lin. 1 ; lat. lin. $\frac{1}{2}$.

This species is apparently subject to variety in shade of colour rather than in pattern : the irregularly-formed, subtriangular, antemedial marking is constant in form ; in no case does it reach the suture : it is connected with an irregular lateral marking, which (broader, post-medially) extends to the apex ; thus causing the apex itself to be transversely flavous. *H. orientalis* may be separated from others of this subsection by the direction of the thoracic fovea, which is not longitudinal but distinctly oblique.

Taken in China, and also received from Siam by Mr. Bowring.

XXXII. *Descriptions of some new Exotic Species of* Lucanidæ. By J. O. Westwood, Esq., M.A., F.L.S., &c.

[Read 7th Oct. 1861.]

The following descriptions may be considered as supplemental to the different memoirs which I have from time to time published in these Transactions on various exotic species of *Lucanidæ* (Trans. Ent. Soc., N. S., iii. 197, &c.). The species here described are of small size, but they are not the less interesting, on account of the peculiarities of structure which they respectively exhibit, and which in several of the species are quite unique in respect to the characters of this family. To these species I have added figures of both sexes of a very interesting species, *Homoderus Mellyi*, from tropical Africa, which has been described by Major Parry. (See Journal of Proceedings of the Society for December, 1862.)

Ryssonotus? *jugularis*, Westw. (Plate XIV. fig. 1.)

R. niger, capite et pronoto nitidis, hoc et elytris purpureo-cupreis, pronoto mediocri angulis posticis emarginatis, elytris dilatatis, capitis lateribus ante oculos productis et truncatis, lobo jugulari deflexo, mento trigono. ♀?

Long. corp. cum mand. lin. 10; lat. pronoti lin. $4\frac{1}{2}$; lat. elytr. lin. $5\frac{2}{3}$.

Habitat Melbourne in Australia.

In Mus. Bakewell et Howitt.

This species is at once distinguished by its metallic hue, which, together with its general form, gives it somewhat the appearance of a female of the genus *Chiasognathus*, to which indeed it seems to be somewhat allied.

It is black, with the head and prothorax glossy; the elytra are almost opake, except the sutural margin, which is polished; the prothorax and elytra have a purplish coppery tint, varying on the disc of the elytra to chesnut; the sides of the prothorax and the suture of the elytra are slightly æneous. The head is small, rugose and very irregular on the crown; in front of each eye is an elevated tubercle, and there are two others close together in the middle; towards the front margin the posterior lateral angles of the head are extended outwards beyond the eyes and are truncated.

The mandibles are about the length of the head, elongate-ovate; concave, with two or three small rounded lobes on the upper margins. The maxillæ are simple, the upper lobe being triangular and strongly penicillated; the palpi have the 2nd joint longer than the rest. The mentum is triangular, fixed on the fore-margin of a broad transverse deflexed projection of the jugulum, the anterior portion of the labium being hidden by the produced angle of the mentum. The antennæ are short, with the capitulum formed of the six terminal joints, which are moderately produced on their inner angles. The eyes are entirely divided by the broad truncated septum.

The prothorax is of moderate size, much broader than the head, but narrower than the middle portion of the elytra; the anterior angles are rounded, but the posterior ones are obliquely emarginate; the lateral margins are serrated and the disc has an impressed channel along the middle, a curved impression on each side behind the eyes, the sides deflexed and very rugose, and another impression on each side within the posterior angles extending towards the disc. The elytra are broad and convex, dilated beyond the middle, very delicately punctured, especially towards the sides; the suture elevated and transversely and obliquely wrinkled. The legs are robust, the anterior tibiæ broad, with about six serratures at the base and two strong teeth at the extremity of the outer margin. The fore posterior tibiæ have two spines on the outer margin, one near the middle and the other towards the base. The body beneath is obscure black.

I am indebted to Robert Bakewell, Esq., F.L.S., for an opportunity of describing and figuring this remarkable insect, which I presume to be a female specimen. Since the above description was in type, Dr. Howitt has sent a drawing of another specimen to England from Australia.

Sinodendron? areolatum. (Pl. XIV. fig. 2.)

Cylindricum, punctatissimum, punctis variolosis, nitidum, prothorace antice angustato, disco areolis lævibus notato, elytris 4-subcostatis; capitis disco semicirculo parvo nitido inter oculos instructo; pedibus subelongatis. ♀.

Long. corp. lin. 6.

Habitat in Nova Zealandia.

In Mus. Parry.

I have only seen a single female specimen of this species, the diagnosis of which is therefore for the present only provisional;

indeed the want of the opposite sex, joined to the broken condition of the antennæ in the specimen which I have examined, leaves it doubtful whether it be rightly referred to the genus *Sinodendron*, with which it agrees in the porrected scapes on which the labial palpi are placed; but the palpi, both maxillary and labial, are much larger than in *S. cylindricum*.

The upper surface is very convex; black, polished, with the sides of the prothorax and elytra, and suture of the latter, obscure pitchy-red; covered with large, close, variolose, circular punctures, those at the sides of the prothorax and hind part of the elytra emitting whitish-buff scales. The head is small, transverse, narrowed in front, the crown having a small raised polished semicircular ridge in the middle, between the eyes. The eyes are entire: the clypeus is small and transverse, in front of which the small transverse labrum is affixed. The mandibles are very small, broad, sub-triangular, with three minute obtuse teeth at the apex. The maxillæ are small and penicillated; neither of the lobes are armed with a horny hook. The mentum is small, transverse, with the anterior angles rounded, clothed sparingly with long reflexed hairs; the fore-margin straight, having the small entire setose labium porrected at its centre, the labial palpi arising from two broad porrected scapes. The palpi (both maxillary and labial) are moderately long and slender. The basal joint of the antennæ is rather long and very curved. The prothorax is as broad at its base as the elytra, but its sides are gradually rounded and narrowing to the head; its lateral margins are finely serrated and the disc marked with an irregular, central, longitudinal, wide, polished line, and two elongated patches in front and two behind, rather raised and polished; the middle of the hind-margin is extended backwards toward the scutellum.

The elytra are very convex, about half as long again as they are wide, covered with punctures, each having four slightly defined longitudinal ridges, upon which the punctures are not so close as they are on the intervening depressed spaces. The legs are moderately long, the anterior tibiæ slender and curved, with thirteen irregular-sized denticulations, and with a strong spine near the apex, which also forms a curved spine. The intermediate and posterior tibiæ are armed with a central spine and several minute denticles. The body beneath is black, glossy, and less strongly punctured than on the upper surface.*

* See note, p. 437.

Mitophyllus Parrianus. (Pl. XV. fig. 3.)

Piceo-niger, nitidus, punctatus, squamis luteis tessellatus, mandibulis mediocribus, prope basin externe elevatis, denteque erecto subapicali armatis, antennarum capitulo mediocriter elongato. ♂.

Long. corp. lin. $5\frac{2}{3}$.

Habitat in Nova Zealandia.

In Mus. D. Parry.

The head is sub-quadrate, black, very thickly and finely punctured in the hinder part; the front depressed and slightly excavated, separated from the hind part by a slightly-raised semicircular ridge between the eyes, terminating on each side in the porrected anterior angles of the head, immediately beneath which the antennæ are affixed. The eyes are large, round and entire. The antennæ are slender, 10-jointed; 1st joint long, covered with a few erect bristles in front, the 7th joint is sub-triangular, with several bristles starting from its apex; the three joints of the capitulum are of moderate length, chesnut-coloured, and clothed with fine pale pubescent hairs. The mandibles are not longer than half the length of the head, somewhat triangular, excavated above; the outer margin near the base elevated into an obtuse lobe, and the upper edge near the tip armed with an erect triangular tooth; they are black and glossy, with a few punctures and luteous bristles. The lobes of the maxillæ are not armed with a curved spine on the inner margin, the palpi are slender. The lower lip was unfortunately lost in the examination of the unique specimen.

The prothorax has the sides more strongly rounded than in *M. irroratus*, with all the angles acute, the margin slightly serrated, the disc irregularly punctured, having several smooth patches, especially down the middle and on each side behind; the disc on each side within the anterior angles is rather concave.

The elytra are convex, and closely punctured, each puncture emitting a luteous scale, the scales disposed in several longitudinal series connected together by several transverse irregular patches of scales; the intervening spaces less strongly punctured. The legs are slender; the anterior tibiæ with about fourteen minute obtuse serratures between the base and the tooth beyond the middle, and with about seven serratures between it and the apical external tooth. The middle and hind-tibiæ are armed with several very minute teeth, as well as with one more conspicuous in the middle of the outer margin. The body beneath is pitchy-black,

glossy, punctured, and sparingly squamose, with the jugulum chesnut-coloured.

This species is at once distinguished from *M. irroratus* by its more robust form and the shorter capitulum of its antennæ.

Ceratognathus punctatissimus, Westw. (Pl. XV. fig. 4.)

Oblongus, cylindricus, punctatissimus, niger; lateribus pronoti, elytris pedibusque fuscis; capite brevi, parvo, suprà tuberculo bilobato armato; mandibulis capite longioribus, suprà auriculatis; pronoto lateribus rotundato, et intra margines laterales depresso. ♂.

Long. corp. lin. $6\frac{1}{4}$.

Habitat in Nova Hollandia.

In Mus. Parry.

Of this species I have only seen a single male individual. It is slenderer in form and more elongate than *C.? mentiferus*, and is densely covered with minute punctures. It is black, with the sides of the prothorax, elytra and legs dark brown, and the antennæ pitchy. The head is small, the anterior angles are not prominent, but rounded, and the crown of the head is armed with a transverse bilobed tubercle. The mandibles are porrected, longer than the head, slightly curved, strongly bifid at the tip, and with two small conical projections near the tips; the upper edge is compressed into an erect rounded lobe or tooth; the inner margins fringed with bristles, set on transversely.

The maxillæ are minute, with the terminal lobe small, simple, conical, and strongly penicillated with hairs; the inner lobe is also minute, slender, and simple. The palpi are moderately long and slender, with the basal joint minute. The mentum is small, transverse, flat, with the anterior lateral angles rounded off; the labial palpi are slender, with the basal joint visible—they are inserted near the middle of the fore-margin of the mentum.

The antennæ are small, and the capitulum is composed of three moderately long branches. The prothorax is much wider than the head, transverse, with the lateral margins slightly rounded and finely serrated. The anterior margin is transversely elevated, and the sides are depressed within the lateral margins. The disc is thickly covered with minute punctures, and there is an impressed longitudinal line down the centre. The scutellum is small and semicircular. The elytra are oblong, rounded at the tip, thickly covered with small punctures, emitting fine setæ, and

each has about six slender elevated costæ. The legs are slender; the anterior tibiæ finely serrated, and armed with two teeth at the tip (the outer tooth forming the apex itself). The posterior tibiæ have a few minute spines on the outer margin, the apical outer angle being elongated and truncate.

Ceratognathus? *mentiferus*, Westw. (Pl. XV. fig. 5.)

C. brevis, subcylindricus, niger, parum nitidus et luteo-squamosus, dense punctatus; elytris tricostatis; capite tuberculo medio conico, mento deflexo cordiformi, oculis sinuatis. ♂.

Long. corp. lin. $5\frac{1}{2}$; mandib. lin. 1; lat. elytr. lin. $2\frac{1}{3}$.

Habitat Goulborn River (Nov. Holland.)

In Mus. D. Parry.

Short, robust, subcylindrical; black, slightly glossy, thickly punctured, slightly clothed with small luteous scales. Head transverse, the anterior angles produced, elevated and truncated, the space between their angles (or front margin) somewhat emarginate; the clypeus vertical, subtriangular, rounded at the tip, which meets the emargination of the mentum and shuts the mouth. The middle of the disc of the head is armed with a single, conical, obtuse tubercle; the eyes are sinuated in the middle, both in front and behind.

The antennæ have the basal joint long and slender, the six following very short, and the three terminal ones produced on the inside into long, slender, setose branches, almost equal in length to the entire antennæ.

The mandibles are porrected, rather longer than the head, rather slender, with a strong obtuse tooth near the middle of the inner margin, and a smaller one between it and the apical tooth, which is bifid.

The maxillæ are very small, with a very minute apical lobe, somewhat triangular, obtuse at the tip, and covered with long hairs; the inner lobe simple; the maxillary palpi are moderately long and slender. The mentum forms a large deflexed lobe, somewhat heart-shaped, strongly punctured, setose, deeply impressed down the middle and notched at its base.

The prothorax is transversely quadrate, with the anterior angles rounded and the hind ones slightly emarginate; its upper surface is marked with several polished impunctate patches, and a clear, slender line along the middle, and four round impressions in a row nearly across the transverse centre. The elytra are short, rounded at the tip, punctate, each having three longitudinal,

slightly raised, smooth costæ, destitute of punctures, as is also the raised suture. The scutellum is elongate-ovate, pointed at the tip and punctured.

The underside of the body is black, shining, punctured and clothed with luteous setæ.

The legs are rather slender, the anterior tibiæ finely serrated, and armed with one tooth on the outside near the tip, which is also produced into a terminal tooth. The posterior tibiæ are also finely serrated, the intermediate ones armed with a minute tooth on the outside near the apex, which is also acutely pointed, and the posterior ones have the outer apical angle produced and truncated at the tip.

I have only seen a single individual of this curious species, which in general form and structure of its antennæ approaches the genus *Ceratognathus*, but the remarkable formation of its mentum and sinuate eyes differ so much from the type of that genus that I do not doubt that some of our "go-a-head," "know nothing" Entomologists will make it the type of a distinct genus.

Dorcus adspersus, Bohemann, Ins. Caffr. 2, 384.
(Pl. XVI. fig. 6.)

D. parvus, convexus, opacus, punctatus, niger, dense et irregulariter luteo-squamosus et tessellatus, pronoto anticè tuberculis tribus minutis in triangulum dispositis. ♀.

Long. corp. lin. $5\frac{1}{4}$.

Habitat in Natalia.

In Mus. Parry et Mniszech.

Opaque, black, convex, thickly clothed with luteous scales arising from the punctures on the disc, leaving irregular dark patches. The head is small and unarmed, the hinder portion narrowed and punctate, the anterior angles obliquely truncate. The labrum is produced and semicircular; the mandibles small, and acutely bifid at the tips. The eyes slightly incised by the lateral septum; the antennæ short; the capitulum small, rounded and 3-jointed; the maxillæ with the terminal lobe ovate, and strongly penicillated, the inner lobe armed with a strong, curved hook. The mentum is broader than long, with the anterior angles rounded; the labial lobes concealed, but furnished with long projecting hairs. All the palpi are short, the terminal joint being the largest. The prothorax is broad, convex, rounded at the sides, with three small raised tubercles near the middle of the fore-margin, arranged in a triangle (***); the disc is variegated

with irregular oval patches of pale scales, the middle of the disc having a broad central dark patch. The scutellum is semicircular and slightly impressed. The elytra are convex, rounded behind, as broad as the middle of the prothorax, luteous, with several longitudinal dark patches towards the base, a transverse series of shorter ones across the middle, and several more obscure ones towards the apex. The legs are rather slender; the fore-tibiæ are irregularly serrated and armed with two strong teeth at the tip, and the four posterior tibiæ are armed beyond the middle with a small spine.

The body beneath is black, shining and slightly clothed with short luteous hairs arising from the punctures. The pectus is canaliculated.

Prof. Bohemann does not state the sex of the specimens which he has described. That in the collection of Major Parry, from which I have derived my figure, appears to be a female.

DESCRIPTION OF THE FIGURES.

PLATE XIV.

Fig. 1—1 *e*.

Ryssonotus? jugularis, and details:—

Fig. 1. The insect magnified; 1 *a*, the head and prothorax seen from beneath; 1 *b*, the mandibles seen from above; 1 *c*, the eyes, jugulum and mentum seen laterally; 1 *d*, the maxilla; 1 *e*, the mentum and labial palpi.

Fig. 2—2 *d*.

Sinodendron? areolatum, and details:—

Fig. 2. The insect magnified; 2 *a*, clypeus, labrum and mandibles; 2 *b*, the tip of the mandibles seen laterally; 2 *c*, the maxilla; 2 *d*, the mentum, labium and labial palpi.

PLATE XV.

Fig. 3—3 *d*.

Mitophyllus Parrianus, and details:—

Fig. 3. The insect magnified; 3 *a*, the mandibles seen from above; 3 *b*, the mandible seen sideways; 3 *c*, the maxilla; 3 *d*, the antenna.

Fig. 4—4 *d*.

Ceratognathus punctatissimus, and details:—

Fig. 4. The insect magnified; 4 *a*, the mandible; 4 *b*, the maxilla; 4 *c*, the mentum and labial palpi; 4 *d*, the antenna.

Fig. 5—5 *e*.

Ceratognathus? mentiferus, and details:—

Fig. 5. The insect magnified; 5 *a*, the head seen sideways; 5 *b*, the labrum,

base of the mandibles, mentum and palpi seen from front; 5 *c*, the maxilla; 5 *d*, the mentum and labial palpus; 5 *e*, the antenna.

PLATE XVI.

Fig. 6—6 *e*.

Dorcus adspersus, and details:—

Fig. 6. The insect magnified; 6 *a*, the mentum, external bases of the maxillæ, palpi and mandibles closed; 6 *b*, the maxilla; 6 *c*, the mentum and labial palpi; 6 *d*, the antenna; 6 *e*, the fore-tibia.

Fig. 7—7 *h*.

Homoderus Mellyi, Parry. Male.

Fig. 7. The insect of the natural size; 7 *a*, the right side of the head seen from above; 7 *b*, the underside of the head, with the mentum and labium removed, showing the maxilla, base of mandibles and base of antennæ; 7 *c*, the maxilla; 7 *d*, the mentum; 7 *e*, the labium and labial palpi; 7 *f*, the eye; 7 *g*, the terminal joints of the antennæ; 7 *h*, the middle tibia.

Fig. 8—8 *e*.

Homoderus Mellyi, Parry. Female.

Fig. 8. The female of the natural size; 8 *a*, the labrum and mandibles; 8 *b*, the mentum; 8 *c*, the extremity of the antennæ; 8 *d* and 8 *e*, the extremity of the fore-tibia.

Note.—It has been suggested to me that the insect described at p. 430, under the name of *Sinodendron*? *areolatum*, may be identical with *Ceratognathus Helotoides* of Mr. Thomson's recently published Treatise on *Lucanidæ;* but the insect I have described does not even belong to the same sub-family as *Ceratognathus*, and it has not the most remote resemblance to a *Helota*. If it should nevertheless prove identical, I contend that such unintelligible nomenclature and description disqualify the retention of Mr. Thomson's name.—J. O. W., *Jan.* 1863.

XXXIII. *Note upon certain British Species of the Genus* Quedius *in which the Elytra are more or less æneous, and the Scutellum punctured.* By G. R. Waterhouse, Esq., V.P.Z.S., &c.

[Read 3rd November, 1862.]

These insects are comprised in the genus *Raphirus* by Stephens. I will first describe the species in Stephens' collection which represents the *R. nitipennis* of his works.

Qued. elongatus, attenuatus, niger; antennis, palpis, pedibusque testaceis; coxis intermediis, femoribus, tibiisque posticis infuscatis; elytris nigro-æneis, posticè rufo-marginatis, pube plus minusve rufescenti vestitis, crebrè subtiliter punctatis; scutello crebrè punctulato; abdomine suprà lineis quatuor interruptis cinereo-pubescentibus ornato, segmentis basalibus levitèr trifoveolatis, totis ventralibus testaceo-marginatis.

Long. 3 *lin.*

This insect, which is about equal in length to, but rather narrower than, *Q. attenuatus*, Gyll., agrees very nearly in some respects with Erichson's description of *Q. virgulatus:* like that species it has the elytra fringed at the apex with fulvous pubescence (indeed the pubescence of the elytra is for the most part fulvous), and the abdomen is adorned with lines of ash-colored pile; but in our English insect the lines are not three in number, nor are they uninterrupted, as would appear to be the case in *Q. virgulatus.*

When viewed with the head of the insect towards the light, the pale markings present themselves in the form of two lines on the dorsal surface, which are interrupted on the hinder part of each segment; and, again, near the lateral margin, the pale pubescence forms a somewhat V-shaped marking, composed of two lines, which, commencing at the base of the segment, converge and meet at an acute angle posteriorly, and terminate scarcely beyond the middle of the segment. If the insect be reversed in position as regards the light, the appearance is very different, and this arises from the unequal surface of the segments, there being on each segment two shallow oblong foveæ (distinct on the basal segments, and obliterated on the 6th segment): *now* each seg-

ment presents two widely separated pale spots at the base,* the depressions on the segments are more evident, and we perceive, besides the two larger shallow foveæ, a slight oblong mesial depression on each of the basal segments.

The greater part of the abdomen is clearly clothed with dusky pubescence, but rather less dark than in *Q. attenuatus*. The punctuation of the insect is rather finer and more dense than in that species; the middle coxæ, and hinder femora and tibiæ, are very little darker than the anterior legs, being but indistinctly tinted with fuscous. The abdominal segments beneath are rather broadly, and the last segment very broadly, margined with testaceous. The head and thorax commonly have an indistinct æneous hue, and the terminal joint of the palpi is more or less piceous.

These are the leading characters of the *Q. nitipennis* of Stephens' collection and description. The type specimen is a female; in the male of the same species, the anterior tarsi are distinctly dilated, and the sixth abdominal segment presents a triangular emargination, the apex of the triangle being slightly obtuse: the immediate region of the emargination is smooth and glossy, and faintly impressed in the mesial line.

Var. 1. *Coxis intermediis, femoribus, tibiisque posterioribus piceis.*

The specimens in my collection in which the intermediate coxæ and the hind legs (with the exception of the knees and tarsi) are dark, sometimes pitchy black, average a larger size than those in which the same parts present only a faint trace of the darker colour, but this will probably not prove a constant distinction. The larger specimens are $3\frac{3}{4}$ lines in length.

Var. 2. *Elytris rufis, basi æneo-tinctis.*

When engaged in determining our British species of *Quedius*, I found in my collection several specimens of the present species, and two bad examples of an insect very like it, but in which I

* Since the above was written I have noticed that under the microscope, in certain lights, the pubescence forming the so-called pale spots appears to be distinctly pale, that of other parts being grey-black; but upon altering the position of the insect with regard to the light, the pubescence appears to be uniformly black, and when, as I have above said, the spots change their position on the insect being viewed from different directions, it may be questioned whether the pale spots are due to a difference in the colour of the pubescence. They are formed, perhaps, by a stronger light striking upon certain patches of hairs, which are situated on the sides of the shallow foveæ; if this be the case, however, the deception is most complete.

could not trace the pale markings on the abdomen; this, however, I thought might arise from the condition of the specimens, and accordingly united the whole as one species under the name *attenuatus*, although only those with the immaculate abdomen strictly agreed with Erichson's description. I was further helped to this conclusion by the circumstance that no other insect in Erichson's work could be identified, as it then appeared to me, with our apparently common insect. Since that time, however, I have found the species now under consideration plentifully, and during the past year I have taken a specimen of what I now regard as a distinct species, and as the true *Q. attenuatus* of Erichson. When in perfectly good condition the latter has no trace of pale markings on the abdomen, neither are there any distinct foveæ.

I have thus been led to re-examine both descriptions and specimens of the *Quedii* allied to *attenuatus*, and find some important corrections to make.

It now appears to me:—

First. That the *Staphylinus semi-obscurus* of Marsham is not the insect described under the same specific name by Erichson and Kraatz, but is the *Q. rufipes* of those authors.

I learn that the *Q. rufipes* and *Q. monticola* very closely resemble each other, and, indeed, Dr. Kraatz informs us that the latter has commonly been mistaken for the former, but that *Q. rufipes* may be distinguished by its very thickly punctured scutellum. I have before me specimens of *Q. monticola* sent by Dr. Kraatz to the British Museum, and these I find are extremely like Marsham's insect, but differ in having the scutellum less thickly and less finely punctured, and in having a distinct smooth margin. In Marsham's insect the scutellum is as thickly and finely punctured, and as thickly clothed with pubescence, as the elytra, and there is no distinct smooth margin. Furthermore, Marsham's insect differs in being more attenuated anteriorly, the thorax being more contracted in front, and the head narrower, and of a somewhat ovate form; the punctuation is rather finer, and the joints of the antennæ are shorter, the intermediate joints being quadrate (or some of them even *slightly* broader than long), whilst in *Q. monticola* they are all longer than broad. These points of distinction are also indicated in the descriptions of Erichson and Kraatz. Our specimens vary from $3\frac{3}{4}$ to $4\frac{1}{4}$ lines in length.

The *Q. semi-obscurus* of Kirby's collection agrees with the original Marshamiam type.

Q. semi-obscurus is not an uncommon insect with us, but I have

not hitherto met with the *Q. monticola*. *Q. rufipes* is said to be peculiar to the South of Europe, and this militates *slightly* against the above conclusions.

Secondly. The *Raphirus semi-æneus* (Kirby), Steph. Illust., belongs to the var. 1 above described.

The *Q. semi-obscurus* of Erichson and Kraatz probably belongs to the same; and, certainly, two French specimens sent as "*Q. semi-obscurus*" by Dr. Kraatz are identical with this same var. 1.

Thirdly. The *Raphirus rufipennis* of Kirby and Stephens is identical with the var. 2 above noticed.

Fourthly. The *Raphirus attenuatus* both of Kirby and Stephens' collections is the same as the *Q. boops* of Erichson and Kraatz.

The more common condition of the insect which I have described, is that which presents itself in the *R. semi-æneus* of Stephens, and I think it would be well to adopt his specific name for the insect.

XXXIV. *A few Remarks upon Mr. James Thomson's Catalogue of* Lucanidæ, *published in the "Annales de la Société Entomologique de France,* 1862." *By* Major F. J. Sidney Parry, F.L.S.

[Read 1st December, 1862.]

Having recently submitted for publication, in the Entomological Society's Proceedings, descriptions of several new species of exotic *Lucanidæ*, and having subsequently received, through the kindness of Mr. Snellen Van Vollenhofen, of the Leyden Museum, that gentleman's interesting Paper upon several new and rare species published in the Tijdskrift v. Entomologie and illustrated by some excellent figures, I find therein described two, if not three, of my species alluded to above, viz., *Odontolabis Lacordairei* ♂, and *O. Brookeana* ♂; but with regard to the third species, *Dorcus Tragulus*, V. Vollenhofen, loc. cit. pl. 7, figs. 4, 5, 6, I am not so positive. This species may possibly, however, prove identical with *Cladognathus productus*, Parry, described from a single specimen in the rich collection of Mr. Wallace, and discovered by that gentleman in Ternate.

The names of the two first species have been courteously retained as (Parry, MSS.), Mr. v. Vollenhofen having probably been informed by Prof. Westwood that I had thus named them. A duplicate publication of them in our own Transactions, accompanied by figures, may not, perhaps, prove uninteresting to many of the members.

I have also just received the "Annales de la Société Entomologique de France," 2ième Trimestre, 1862, in which appears the publication, by Mr. Thomson (the well-known American Entomologist), of a Catalogue of the *Lucanidæ* belonging to his collection, accompanied by descriptions of several new species. Upon this Catalogue I beg to offer a few remarks.

At the commencement of his preface, Mr. Thomson quotes the several Entomologists who have published upon this family; but why the name of Mr. Wilson Saunders, whose descriptions of many new and interesting species are so familiar to Entomologists, has been excluded, I am at a loss to understand; the non-mention of my own name I pass by in silence. Mr. v. Vollenhofen, although a

perfect stranger to me, kindly alludes in his late publication to my proposed general catalogue of the *Lucanidæ*, and maintains, besides, with an acknowledgment, my manuscript names to two of his recently described new species. Mr. Thomson, on the contrary, possessing the same information, even to a greater extent, neither alludes to the one nor acknowledges the other, but appropriates my species, as well as the names, for several of his new descriptions, having obtained the same from the collection of Count Mniszech, who ticketed his specimens upon my authority from manuscript descriptions (intended for early publication) which I had the pleasure of showing him during his recent visit to our metropolis.

Of these several new species, I had prepared descriptions for the Society's Transactions, some of which have already been anticipated by the appearance of Mr. Thomson's work. One, however, only described in the Catalogue is to be found in my recent Paper, viz., *Odontolabis Stevensii;* a duplicate publication of this species, with a figure, will also appear in the Transactions of the Society.

I have not made the foregoing remarks for the purpose of expressing the slightest anxiety with reference to any priority of publication, it certainly being very unimportant to science in general, so long as new and interesting species are described, whether A. or B. describes them; but it is important to those connected with science that there should exist a rigid system of mutual courteous consideration, with an entire absence of petty scientific jealousy.

I will now proceed to make some brief remarks with reference to the actual catalogue and the newly created genera, as also to allude to some slight inadvertencies in respect to the nomenclature of certain species.

Against the general arrangement I have nothing to object; it is evidently taken from that used in Count Mniszech's magnificent collection; it corresponds also with my own, and is based principally upon Professor Lacordaire's system (vid. Genera des Coléoptères); but the want of references as to description and synonymy of the various species renders it almost useless. It must be considered as the mere catalogue of a tolerably large collection, and not a general scientific arrangement of all the species that have hitherto been described, with their synonymy and reference to descriptions. To carry out such a catalogue much patience, opportunity, and possession of material is essentially required, and even then probably numerous errors will occur.

Mr. Thomson mentions 190 species in his collection, a very large number, when compared even with the late Mr. Hope's, whose catalogue contained 166 species, but from which a considerable reduction is to be made. It may, however, surprise some Entomologists to hear that of late years so numerous have been the additions of new species to our collections, that I am in a position to assert my actual knowledge of 322 species, nearly all having been described, and of which my own collection possesses 276 species, the largest collection of Lucanoid Coleoptera, I believe, ever brought together; that of Count Mniszech is also of a very vast extent, containing 255 species.

With such a large amount of material, it is quite evident that to prepare a satisfactory catalogue of the *Lucanidæ* much patience and consideration is required; such a work, to obtain a successful result, ought not to be hastily executed, and of this I am the more convinced after analyzing the publication at present before me.

I now propose to take seriatim the various genera and species to which I am desirous of referring.

1. *Chiasognathus Mniszechii*, Thomson, n. sp. Chili ♂.

This fine pubescent species may possibly prove to be identical with *Chiasog. Jousselinii* ♂, Reiche, Chili,—a unique specimen in the collection of Mons. Jousselin, at Versailles (vid. Ann. Soc. Ent. France, tom. 8, p. 267).

2. *Chiasognathus Reichii*, Thomson, n. sp. Chili ♂.

This insect may probably be the ♂ of *C. Latreillei* ♀, published in Gay, Hist. de Chili, Zool. v. p. 42. I may here remark that Mr. Thomson, in describing the publication of this genus by Mr. Stephens, as appearing in the Philosophical Trans. of *Canterbury*, instead of those of Cambridge, has probably copied this error from Dr. Burmeister (vid. Handbuch der Entomologie, p. 337). Solier, in Gay's Hist. de Chili, has also committed the same inadvertence.

3. *Sphænognathus Murrayi* ♂, Thomson, n. sp. Venezuela.
rugosum, Parry, MSS.

Mr. Andrew Murray, so intimately acquainted with the several species of this sub-genus, *had* kindly undertaken the description of this new species for our Transactions. I had long since pointed

out to my friend Count Mniszech its difference from *Sph. Lindenii*, Murray.

4. *Streptocerus speciosus*, Fairmaire ; Thomson, Cat. p. 393.
Syn. *Dejeanii*, Solier, Gay's Hist. Chili.

It was Mons. Solier, not Mons. Blanchard, who gave the name of *Dejeanii*, loc. cit., to the insect previously described by Mons. Fairmaire. As no reference to the descriptions of this species is made, I now give it.

S. speciosus, Dej. Cat.; Fairmaire, Ann. Soc. Ent. 1850, p. 53, pl. 1, fig. *a* ♂, *b* ♀.

S. Dejeanii, Solier, Gay, Hist. Chili, tom. v. p. 44 (1851).

S. speciosus, Westw. Trans. Ent. Soc. iii. N. S. pl. xi. fig. 1.

In the work alluded to Mons. Solier quotes Mons. Fairmaire's description under the name of *S. Dejeanii*. This I need scarcely point out to be an error.

5. *Lepidodes*, Westw.; Thomson, Cat. p. 392.
Cacostomus, Newman (1840).
L. rotundicollis, Westw. (1841).
C. squamosus, Newman (1840).

Had Mr. Thomson consulted the published descriptions of the above genera, he would not have substituted Prof. Westwood's name for that of Mr. Newman. Mr. Newman published *Cacostomus squamosus* ♂ as a new genus in the Mag. Nat. Hist. vol. 4 (1840). Prof. Westwood's descriptions, ♂ ♀, appeared in the Ann. Nat. Hist. 1841. Consequently Mr. Newman's genus has an undoubted priority. In vol. iii. N. S., of our Entomological Transactions, 1855, under the name of *Cacostomus squamosus*, Newman, Prof. Westwood has again given a further interesting account of this genus.

6. *Lamprima amplicollis*, Thomson, n. sp.

Count Mniszech informs me that he considers this species as only a var. of *L. Latreillei*, M'Leay.

7. *Lamprima fulgida*, Boisduval; Thomson, Cat. p. 393.

With the above-named insect has been united *L. varians*, Germar, a very distinct species.

8. *Cantharolethrus*, n. g., Thomson, Cat. p. 413.
C. Reichii ♀.

A curious and interesting genus, the type of which, according to Mr. Thomson, is *Pholidotus Reichii* ♀, Hope, Colombia (vid. Ent. Trans. Lond. vol. 4, pl. 13), a very rare species,—unique, I believe, in Coll. Thomson (olim Laferté).

9. *Cantharolethrus Georgius*, Thomson, Cat. p. 412 ♂.

This second species, ♂, of which only a single specimen is known, belongs to the rich collection of Count Mniszech, and was described under the name of *Dorcus Luxerii*, Buquet, Ann. de la Soc. Ent. 1843. Why Mr. Thomson has ignored Monsieur Buquet's description, and why he should have preferred founding his new genus upon a ♀ instead of a ♂, I am at a loss to understand. It is very possible that they may prove hereafter to be one and the same species. Mr. Thomson has placed this new genus with the true *Lucanidæ;* I think, however, that it has a closer affinity to the *Chiasognathidæ*, to which it was originally referred by the Rev. F. Hope.

10. *Luc. Lunifer*, Thomson, Cat. p. 393.
Syn. *villosus*, Hope.

The synonymy of *villosus*, attached to this species, is an error. *L. villosus*, Hope (Zool. Miscel. 1831, Nepaul) is a very rare, but distinct species.

11. *L. Smithii*, White (inedit. ?); Thomson, Cat. p. 394.

This new species was originally named by myself, after the present excellent President of our Society, with a description prepared for publication; Mr. Thomson has shown more courtesy to Mr. Adam White than he has to myself, for although a new species, and apparently in his collection, he has most mercifully not published it, but has condescended even to acknowledge the MS. name, although in error as to the author of it. A description of this species will probably appear in the next publication of the Society's Proceedings. (See Proceedings for December, 1862.)

12. *Hexarthrius Parryi*, Hope; Thomson, Cat. p. 394.
Syn. ♀ *Serricollis*, Hope.

Luc. Serricollis ♀ was described by the late Rev. F. W. Hope, vid. Cat. p. 11. The type of this insect I have examined; it is not the ♀ of *H. Parryi*, but that of *Hexarthrius Forsteri* ♂, also from Assam.

13. *Odontolabis Cuvera*, Hope; Thomson, Cat. p. 395.
Syn. *L. Delessertii*, Guérin.

L. Delessertii ♀ is very different from the ♀ of *O. Cuvera;* it was originally described by Mons. Guérin (Delessert, Souvenir de Voyage de l'Inde, p. 48, pl. 12, fig. 3), and forms one of no less than six distinct species, which Dr. Burmeister has conglomerated with *O. Bicolor*, Oliv. (vid. Handbuch, p. 360). Through the kindness of my friend Count Mniszech, the following information has been obtained: Mons. Delessert, it appears, collected three specimens ♀ in the Mysore country (they very probably may prove to be the females of *Anoplocnemis Burmeisteri*, Hope, a unique species ♂ existing in the Hopeian Collection at Oxford, and also received from the same district): one of the specimens alluded to is in my own collection, the other two are in the possession of Count Mniszech. Mons. Delessert it appears, previous to embarking for Europe, made the purchase of a collection of *Coleoptera*, in which were several males of *O. Cuvera*. Mons. Guérin, not being acquainted with the true female of *O. Cuvera*, very naturally united them together, under the name of *L. Delessertii*, vid. loc. cit.; a corrected synonyma of this species will appear in my proposed general Catalogue of the *Lucanidæ*.

14. *L. Lacordairei* and *L. Ludetringii*, Thomson, Cat. p. 413.

These two rare and very distinct new species, recently described both by Mons. v. Vollenhofen and myself, are in my own collection, and I am consequently able to affirm that they are good species, notwithstanding Mr. Thomson's opinion that they are varieties of *L. Cuvera*, Hope. They belong to the genus *Odontolabis*.

15. *Neolucanus*, n. g., Thomson, Cat. p. 415.
O. Baladeva, Hope (type), not *Baladevus*.

Mr. Hope very happily divided his sub-genus *Odontolabis* into two sections; to the 1st, as one of its principal characters, he assigns the following: "Caput pone oculos in ♂ tuberculo utrinque armatum;" and for the 2nd, he adds, "Caput pone oculos in ♂ inerme." Mr. Thomson, for the latter, proposes the name of *Neolucanus*. In the manuscript of my catalogue, I have suggested the name of *Anodontolabis*, a word better suited, I think, to show the connection with *Odontolabis*.

16. *Cladognathus mandibularis*, n. sp., Thomson, Cat. p. 417.
Japan.

From the description of this species, I have but little doubt that it is identical with *L. inclinatus*, Motschulsky, also from Japan (vid.

Études Ent. 1857, p. 59, pl. 1. fig. xi): several specimens were lately sent over by Mr. Fortune, in a collection from Japan, forwarded to S. Stevens, Esq.

17. *Clad. dorsalis*, Erichson; Thomson, Cat. p. 396.
Syn. *Lateralis*, Hope.

Two very distinct species, both from the Philippines.

18. *Proposcoilus crenatus*, Thomson, Cat. p. 419, n. sp. India.

A doubtful species, Mr. Thomson very properly pointing out in his description its close affinity to *P. bulbosus* of Hope.

19. *Proposcoilus Thibeticus*, Westw.; Thomson, Cat. p. 396. Thibet.

Prof. Westwood described this species (vid. Trans. Ent. Soc. iii. N. S. p. 199) from a specimen in my own collection. Upon closer investigation, both Prof. Westwood and myself are of opinion that it is the var. minor of *Cladognathus Buddha*, Hope, (vid. Trans. Linn. Soc. vol. xix. p. 107,) from Northern India: the type specimen of which is also in my own collection, having fully developed mandibles.

20. *Megaloprepes*, n. g., Thomson, Cat. p. 420.
Cyclophthalmus, Hope, Westw., Burm., Lacordaire.

I do not see why the unfortunate genus *Cyclophthalmus*, a name so peculiarly appropriate to the several species it represents, so familiar to most Coleopterists, and employed by such well known Entomologists as Messrs. Hope, Westwood, Burmeister and Lacordaire, should be made to give way to the magnificent *Megaloprepes* of Mr. Thomson, because forsooth this gentleman has discovered that some antiquated spider had been previously (perhaps in the last century) christened with the same name: against such doctrine I must protest, as being fraught with great inconvenience; for although, as a rule, such a double employment of a generic name is, if possible, to be avoided, yet when not occurring absolutely in the same order, I do not see any inconvenience likely to arise therefrom; on the contrary, as in the present case, the remedy may be considered worse than the evil. For the second section of *Cyclophthalmus*, of the which *C. platycephalus*, Westw., is the type, Mr. Thomson proposes the name of *Cyclorasis*, and for the first section of the genus *Dorcus*, consisting of *D. Nepalensis*, Hope, *M'Leayii*, Hope,

and others, the name of *Hemisodorcus* has also been judiciously selected.

If, however, the law as laid down and upheld by certain Entomologists is to be stringently applied, Mr. Thomson's *Megaloprepes* may also be changed, Mons. Rambur having long previously applied the name of *Megaloprepus* to a genus of *Libellulidæ*, and as I believe that the generic appellation of *Cyclommatus* is vacant, I beg to propose it; its signification being in accordance with that of *Cyclophthalmus*.

21. *Platyprosopus*, Hope; Thomson, Cat. p. 421.

I am astonished that this name has been permitted to pass unnoticed, it being a fine opportunity for the author's adding another jewel to his generical crown, as I find that it has already been employed *twice* in the order of *Coleoptera*, once by Latreille for a genus of the *Tetramera*, and again by Mannerheim in the *Staphylinidæ*.

22. *Dorcus diabolicus*, n. sp., Thomson, Cat. p. 423. Japan.

This species has already been described and figured, under the name of *D. Niponensis*, v. Vollenhoven, Tijdschrift v. Entomologie, 1860-61, p. 13, pl. vii. fig. 3; it has been received rather abundantly from Japan in the collection recently sent over by Mr. Fortune to S. Stevens, Esq.

23. *Eurytrachelus cribriceps*, Chevrolat; Thomson, Cat. p. 308.
Phillippines, Manilla.
Syn. *Dehaanii*, Hope.

Manifold have been the vicissitudes respecting the nomenclature of this species, Mons. Chevrolat's name having undoubted priority: his description was published in the Revue Zoologique, p. 224, 1841; as he therein states, "mandibulis brevibus, intus unidentatis," I conclude it to have been made from the ♀, possibly however from a small undeveloped ♂. In 1845, the late Rev. F. W. Hope described the same insect under the name of *Lucanus Moloschus* (vid. Cat. p. 21), and finally Dr. Burmeister in his Handbuch der Entomologie, 1847, p. 389, designates it as *Dorcus Oryx*, from Manilla.

Mr. Thomson is in error respecting the synonym *L. Dehaanii*, Hope. This latter species is the var. minor ♂ of *Dorcus Antæus*, Hope, originally published in Ann. Nat. Hist. vol. 12, p. 364, and re-described in his Catalogue, p. 20; from Assam.

24. *Scortizus cribratus* ♀, n. sp., Thomson, Cat. p. 429. Brazil.

From the description, I am inclined to believe it is the ♀ (hitherto undescribed) of *Sclerostomus Neotragus* ♂, Westw. Ent. Trans. N. S. vol. 3, p. 207, pl. 11, fig. 3.

25. *Scortizus cornutus*, Solier; Thomson, Cat. p. 309. Chili.
Syn. *cucullatus*, Blanchard.

M. Blanchard published both ♂ ♀ of this species, under the name of *cucullatus*, in D'Orbigny's Voyage Zool. pl. 12, fig. 10, 1845. The description of *cornutus* ♀ only was given by Solier, in Gay, Hist. Chili, 1851, p. 46, pl. 15, fig. 4; consequently M. Blanchard's name has undoubted priority.

26. *Scortizus cuniculus* (Dej.) ♂, Thomson, Cat. p. 429, n. sp. Brazil.

Mr. Westwood has described the ♀ of this species under the name of *Sclerostomus costatus*, Burm., Ent. Trans. vol. 3, 2nd Series, p. 209, pl. 11, fig. 5.

27. *Figulus Australicus*, n. sp., Thomson, Cat. p. 432. New Holland.

Probably, as suggested by Mr. Thomson, a var. of *Fig. regularis*, Westw. Ent. Mag. vol. 5, p. 263.

28. *Fig. clivinoides*, n. sp., Thomson, Cat. p. 422. New Holland.

The description of this species answers to that of *Fig. Lilliputanus*, Westw. Ent. Trans. N. S. vol. 3, p. 219, pl. 12, fig. 5.

29. *Fig. sublævis*, Palissot de Beauv.; Thomson, Cat. p. 402. Africa.

This species was published and figured in the Ins. Afr. et Amer. p. 3, pl. 1, fig. 4, to which no allusion is made by Mr. Thomson. I have been informed by M. Chevrolat, in whose collection I believe the original type, from the kingdom of Oware, existed, that it is a good species, and quite different from *Fig. Ebenus*, Westw., syn. *Fig. nigrita*, id. *anthracinus* (Klug), although Mr. Thomson has united it with them. Mr. Westwood is of the same opinion. Vid. Ent. Mag. vol. 5, p. 262.

30. *Sclerostomus cicatrosus*, Burm.; Thomson, Cat. p. 400. New Zealand.
Syn. *reticulatus*, Westw.

The nomenclature of this species ought to stand thus:—
Dorcus reticulatus, Westw. 1845, Ent. Trans. vol. 4, p. 275, pl. 20, fig. 4.

Lissotes (n. g.) *reticulatus*, Westw. 1855, Ent. Trans. vol. 3, N. S. p. 218.

Dorcus squamidorsis, White, 1846, Voy. Erebus and Terror, Zool. p. 9, pl. 2, fig. 2.

Ægus cicatrosus, Burm., Handbuch, 1847.

Dorcus Zealandicus, Fairmaire, 1849, Revue Zoologique, p. 414.

31. *Sclerostomus rubripes*, Guérin; Thomson, Cat. p. 400. Chili.

The nomenclature of this species ought to stand thus, the name of *femoralis*, Guérin, having the priority:

Dorcus femoralis, Guérin, Revue Zool. 1839, p. 303.

——— *Darwinii*, Hope, 1841, Ent. Trans. vol. 3.

——— *rubripes*, Hope, Cat. 1845.

Sclerostomus rubripes, Burm., Handbuch, 1847, p. 424.

Dorcus femoralis, Gay, Hist. Chili, Zool. 1851.

Sclerostomus femoralis, Westw., Ent. Trans., N. S. vol. 3, p. 209, pl. 12, fig. 9 a, 9 b.

Dorcus rufifemoralis, Curtis, Capt. King, Voy. Magellan; Trans. Linn. Soc. vol. 19, p. 456.

Mr. Thomson appears to have fallen into the same error with reference to the synonymy of this species as Dr. Burmeister has done. M. Guérin described the species under the name of *femoralis*, and not *rubripes*.

32. *Sclerostomus Lessonii*, Buquet; Thomson, Cat. p. 400.

Syn. *rubrovittatus*, Blanchard, Voy. D'Orbigny, pl. 12, fig. 9.

The synonymy to be rectified; *D. rubrovittatus* is quite distinct: both species are in my own collection.

33. *Sclerostomus leiocephalus*, Solier; Thomson, Cat. p. 400.

Assuming that the insect given by Mr. Thomson under this name is the species so designated by Solier, and described in Gay, Hist. Chili, p. 53, of which the type, labelled in Solier's own handwriting, is in my own cabinet, I am of opinion that it is nothing more than a small ♀ of *S. rubripes*, Guérin, in which the sides of the prothorax are not uniform; and am inclined to think that the species in question has been founded on peculiarities arising from mere malformation. I may also state, that Solier's fig. 5, pl. 15, called *D. leiocephalus*, is in fact not this species, but *D. mandibularis* ♂, Solier, op. cit. p. 56.

34. *Ceratognathus* (*Nigidius*, M'Leay) *cornutus*, Thomson, Cat. p. 403.

Syn. *niger*, Westwood.

Mr. Thomson has evidently confused *Nigidius cornutus* of

M'Leay with *Ceratognathus niger* of Westwood; it must be an oversight, as the two species in question do not even belong to the same genus.

1. *Nigidius cornutus*, M'Leay, N. Holl. Hor. Ent. i. 108, pl. 1, fig. 6 (partes oris).
——— ——— Westw. Ent. Mag. vol. 5, 1838, p. 264.
2. *Ceratognathus niger*, Westw. Ent. Mag, vol. 5, 1838, p. 264, and fig. N. Holl.
——————— *furcatus*, Castelnau, Hist. des Ins. vol. 2, p. 174.

The former species is of great rarity; a specimen is in the British Museum.

35. *Ceratognathus Helotoides* ♀, n. sp., Thomson, Cat. p. 434. New Zealand.

Descriptions of several new species were recently read by my friend Professor Westwood to the Society. One of these species (habitat N. Zealand) is from my own collection, and probably may prove identical with *C. Helotoides* of Mr. Thomson (vid. *ante*, pp. 430, 437), who says, in his diagnosis of the species, ♂ *ignotus*—he then, notwithstanding, proceeds to describe the ♂, and at the end of this description again says, ♂ *ignotus*. In fact, it may be truly said to be a case of *ignotus* altogether.

I append Mr. Thomson's description as authority for my statement.

Ceratognathus Helotoides, Thomson, N. Zeal. ♀.
Long. 13 mill.; lat. 5 mill.

♀. Elongatus, convexus, niger, vix nitidus, pilis squamuliformibus pallidis hûc et passim ornatus, punctatus. Elytra obsoletè, longitudinaliter pluri-costata, costis numero indistinctis. ♂ *ignotus*.

♀. Niger, vix nitidus, pilis squamuliformibus pallidis hûc et passim ornatus.

♂. Elongatus, convexus. Caput inæquale, punctatum, subtriangulariter depressum. Prothorax elongatus, subquadratus, anticè paulo angustior, ut apud *G. Helotam;* elevationibus intricatis plurimis impunctatis instructus: punctatus. Scutellum granulosum. Elytra prothorace latiora, illo quasi 3-longiora, punctata, obsoletè longitudinaliterque costata, costis numero indistinctis, apice rotundata. Corpus subtus pedesque valde punctata.

♂ *ignotus*.

XXXV. *A few Observations upon* Lucanus Lama, *Oliv., and its Synonymy.* *By* Major F. J. Sidney Parry, F.L.S.

[Read 5th January, 1863.]

Among the numerous errors committed by Dr. Burmeister in his descriptions of Lucanoid Coleoptera (vid. Handbuch der Entomologie, vol. 5), with reference to synonymy of species, none is to be found more conspicuous than that in his notice of *Lucanus Lama*, Oliv. (pp. 353, 527), no less than five distinct insects having been united by him to the species in question.

Mr. Victor Motschulsky, in describing some new Coleoptera from Japan (vid. Etudes Entomologiques, 1860, 1861), mentions a new species of true *Lucanus* under the name of *L. maculifemoratus*, suggesting its affinity to *L. lunifer* and *L. Cantori*, Hope (*Lama*, Burm.). Mr. S. Van Vollenhoven, of the Leyden Mus., in his interesting paper upon some new *Lucanidæ*, published in the Tijdschrift v. Entomologie, 1860, 1861, gives the description of a species from Java, *L. sericans*, Dehaan MSS., suggesting its affinity to *L. lunifer*, Hope (*Lama*, Burm.), or to another species in the Leyden Mus. from Japan, which he thinks is *L. villosus*, Hope (*Lama*, Burm.) So much confusion is thus constantly arising in consequence of Dr. Burmeister's mistake, that I feel it would be most desirable to rectify the error by appending to my remarks a tabular statement of the several species alluded to, now so abundant in our collections as to warrant its exactitude. *L. villosus*, Hope (which species Mr. Thomson, in his recently published Catalogue, has also confounded with *L. lunifer*, Hope; vid. *ante*, p. 446), is, however, an exception, being still very rare. The typical specimen (Nepaul) from General Hardwicke's collection, ♂, is in the Brit. Mus.: my own collection possesses also one, but in none other, either English or foreign, have I met with it.

It is difficult to affix, with any positive certainty, the exact species *L. Lama*, Oliv., is to be referred to. The absence of spines from the four posterior tibiæ, as well as the form of head, vid. pl. 3, fig. 8 (and more especially when compared with Olivier's fig. of *L. Cervus* ♀, pl. 1, fig. 1 f), is quite sufficient, I think, to substantiate that *Lama* is not the ♀ of a true *Lucanus*,—but, on the contrary, to warrant the belief that it belongs to the subgenus *Odontolabis*, Hope; and although some Entomologists have

imagined it to be the ♀ either of *O. carinatus*, Linn., or of *O. bellicosus*, Laporte, I am inclined to think, with the late Rev. F. Hope (vid. his Cat. p. 17), that it represents *O. Baladeva*, Hope, a not very uncommon species from India, but whether the ♂ or ♀ is problematical; the figure indicating by the very narrow fore tibiæ the ♂, whereas the short mandibles would lead to the supposition that a ♀ was intended. I may here mention, that *O. Baladeva* is the type of a section of *Odontolabis*, of which one of the principal characters is the following, "Caput pone oculos in maribus inerme."

It is very remarkable that Dr. Burmeister should have united so many distinct species with Olivier's insect, insomuch as he remarks to the following effect (vid. Handbuch, p. 354), "I can answer for the exactitude of the synonymy, having seen the original types of the several species in the collection of the British Museum;" he cannot, I think, here allude to Olivier's type, as it certainly is not in that collection.

L. Lama, Burm. Handbuch der Ent. Ind. Or.
Syn. ♂ *lunifer*, Hope .... id.
Syn. ♂ *villosus*, Hope ..... id.
Syn. ♂ *Cantori*, Hope ..... id.
Syn. ♂ *Mearesii*, Hope ..... id.
Syn. ♀ *nigripes*, Hope ..... id.
♀ *Lama*, Oliv.

Sp. 1. *L. Lama*, Oliv. = *Odontolabis Baladeva*, Hope, ?
Sp. 2. *L.* ♂ *lunifer*, Hope, Royle's Flora Himal., and Cat.
♀ *rugifrons*.*
Sp. 3. *L.* ♂ *villosus*, Hope, Zool. Misc. p. 22; Cat. p. 9.
Sp. 4. *L.* ♂ *Cantori*, Hope, Ann. Nat. Hist. vol. 12, p. 363, and Cat.
Sp. 5. *L.* ♂ *Mearesii*, Hope, Ann. Nat. Hist. vol. 12, p. 364, and Cat.
♀ *nigripes*, Hope, Cat. p. 10.

* The insect Mr. Hope describes as *rugifrons* (vide Cat. p. 24) is not the *rugifrons* he refers to as the ♀ of *lunifer*. The former inhabits Java, and is the ♀ of *Dorcus Bucephalus*, Burm.

Dorcus (*Platyprosopus*) ♂ *Bucephalus*, Burm.
Briareus, Hope, Cat.
♀ *rugifrons*, Hope, Cat. p. 24.

XXXVI. *On the Species of* Catascopus *found by Mr. Wallace in the Malay Peninsular and East Indian Islands.* By W. W. Saunders, Esq., F.R.S., F.L.S., V.-P. Ent. Soc., &c.

[Read 3rd November, 1862].

Baron Chaudoir, in the "Berliner Entomologische Zeitschrift" for 1861, page 116, gives a sketch of the genus *Catascopus*, Hope, enumerating the species known at the time, and describing some new species, the results of Mr. Wallace's researches in the East Indies. This genus being a favourite of mine, I carefully examined the species belonging to it received from Mr. Wallace, and it appeared to me that I had several which were undescribed in the memoir alluded to. I placed the whole series aside for further examination, and with a view of describing those species which might prove new, when Dr. Schaum (who has recently visited this country) kindly gave me his valuable assistance, and pointed out to me the species described by Baron Chaudoir; and it was then apparent, that there were four well-marked forms new to science, two of them remarkable for size and the brilliancy of their metallic colouring. Descriptions of these will be found hereafter. Including the four new species, there appear to be twelve detected by Mr. Wallace. The whole will be found in the following tabular statement, which will clearly point out the distribution of the species :—

Names of Species.	Continent of India.	East Indian Islands.
Schaumii, W. W. S. ..	.....	Sarawack.
facialis, Wied.....	India	Ternate; Batchian; Amboina.
angulatus, Chaud.	Malacca	Sarawack; Ternate; Java.
Aruensis, W. W. S.	.....	Aru.
oxygonus, Chaud.	Malacca	
brachypterus, Chaud. ..	Singapore....	Sarawack.
elegans, Chaud.	.....	Celebes; Amboina; Ceram; Batchian.
—— var.....	Singapore....	Sarawack.
amœnus, Chaud.	.....	Dorey; Aru.
aculeatus, Chaud.	.....	Celebes.
lævigatus, W. W. S. ..	.....	Batchian; Aru.
—— var. W. W. S.	.....	Ternate.
cupripennis, Thom.....	Singapore....	Sarawack.
splendidus, W. W. S. ..	.....	Sarawack.

Of these twelve, ten are new to science, and we see from the table

that five of the species are common to the continent of India and the East Indian Islands; viz., *facialis*, *angulatus*, *brachypterus*, *elegans* and *cupripennis:* six are peculiar to the islands—viz., *Schaumii*, *Aruensis*, *amœnus*, *aculeatus*, *lævigatus* and *splendidus;* and one species, *oxygonus*, is from the Continent alone.

Of the species from the Islands, three seem to be very generally spread—viz., *facialis*, *angulatus* and *elegans;* the others are restricted to one or two localities. It is worthy of remark, that the species found on the Continent have all, except one, been detected at Sarawack.

Looking now to the whole of the species of *Catascopus*, they amount, in Baron Chaudoir's sketch, to thirty-one. Add to this four, the number of new species described in this paper, and we get thirty-five as the present extent of the genus.

These are distributed as follows :—

Main land of India	8
East Indian Islands	13
West Africa	6
East Africa	2
Tropical America	3
Australia	1
Undetermined	2
	35

From this distribution it is evident that the head-quarters of the genus is the East, and that in India and the East Indian Islands more than half of the species are to be found. It is remarkable, that while the East Indian Islands abound in different species, only one has been detected in Australia, although the Australian continent so closely approximates to the Islands in the vicinity of Timor and New Guinea, and that this state of things is reversed as regards the continent of India, which very closely approaches the Islands at Singapore, for eight species are found on the continent, five of which, as before observed, are common to the Islands. The genus *Catascopus* appears to be peculiar to the tropics or the warmer parts of the globe, and there is every reason to suppose that the number of species will be considerably augmented when the researches of naturalists have more fully made known the entomological riches of tropical India. I make this observation, for new species of *Catascopus* are frequently turning up; and in a collection I have lately received from Siam, made by the late M. Mouhot, there are two species which I believe to

be new, although I cannot finally determine this point until I am certain of the characters of the species described by Schmidt Gobel in his Birman Fauna.

1. *Catascopus Schaumii*, W. W. S. (Pl. XVII. fig. 3.)

Above, shining, brilliant, metallic blue-green, the elytra crossed a little below the centre with a broad, ill-defined, dark-purple band; underside of body dark purplish-green.

Head broad, slightly contracted towards the thorax, with two deep, longitudinal foveæ between the eyes; the upper surface rounded and minutely punctured. Antennæ rather short, robust, dark bronzy-purple, as well as the parts of the mouth.

Thorax rather broader than long, wider than the head, much contracted posteriorly, the lateral margins narrowly margined and rounded, the anterior margin very slightly emarginate, the posterior margin slightly sinuate, and the hinder angles sharply pointed, with the upper surface very finely striate transversely, and having a deep transverse depression a little behind the anterior margin, and a central longitudinal furrow, commencing at the transverse depression and reaching nearly to the hinder margin.

Elytra broader than the thorax, half as long again as broad; the shoulders prominent and slightly rounded, the lateral margins nearly straight and parallel, rounded posteriorly, with a deep emargination at the apex of each elytron, the commencement of the emargination having a sharp, broad tooth, and there being two small teeth at the termination; the surface of each elytron with eight deep striæ more or less punctate, and the interstices nearly smooth.

Legs robust and rather long. Tarsi ferruginous-brown.

Length $\frac{8}{10}$ inch.

Hab. Sarawack. Wallace.

This is the largest species of *Catascopus* with which I am acquainted, and at the same time the most brilliant and rich in its colours. The size, and the broad purple band across the elytra, easily distinguish it as a species. In position it seems to approach to *C. Withillii* of Hope, which is found on the continent of India. I have named it after Dr. Schaum, so well known for his extensive and accurate knowledge of Entomology, and especially for his acquaintance with the family of insects to which *Catascopus* belongs. I am much indebted to him for aiding me in determining the species described in this paper.

2. *Catascopus Aruensis*, W. W. S. (Pl. XVII. fig. 5.)

Dark blueish shining green, with the head and thorax of a bronzy hue.

Head somewhat elongate, restricted behind, with the upper surface very smooth and rounded, and having two elongate, roughish depressions between the eyes. Antennæ robust, bronzy-purple, as well as the parts of the mouth.

Thorax nearly quadrate, with the angles prominent, the sides narrowly margined and somewhat contracted posteriorly; the anterior margin slightly emarginate, the posterior quite straight; the upper surface very finely striate transversely, with a longitudinal central furrow running into a curved depression, which passes nearly parallel with the anterior margin.

Elytra somewhat broader than the thorax, about once and a half as long as broad, the shoulders prominent, the sides nearly parallel, the apices rounded and strongly emarginate, with a sharp, broad tooth at the commencement of the emargination, and another at the apex of each elytron. The upper surface regularly and rather deeply striate.

Legs moderate. Tarsi pitchy-brown.

Length $\frac{6}{10}$ inch.

Aru. Wallace.

The nearly quadrate shape of the thorax is a good distinguishing character of this species.

3. *Catascopus lævigatus*, W. W. S. (Pl. XVIII. fig. 2.)

Uniform shining dark metallic green.

Head transverse, rounded above, with two longitudinal, rough depressions between the eyes, curving outwards and extending half the length of the head; upper surface behind the depressions very smooth, with a few long hairs about the eyes. Antennæ short, pitchy-brown, as well as the palpi. Labrum and mandibles bronzy-purple.

Thorax transverse, much broader than long, the sides narrowly margined, rounded and contracted behind, fringed on the anterior half with long hairs; the anterior margin very slightly emarginate, the posterior margin quite straight; the upper surface with slight transverse striæ, and a central, longitudinal furrow, and with two depressions, one on either side near the lateral margins, and a slight one in front near the anterior margin.

Elytra broader than the thorax, about once and a quarter as long as broad, with the shoulders prominent, the sides somewhat curved outwards, and the apices rounded and strongly emarginate,

with a sharp tooth on either side of the emargination; the upper surface very minutely punctate, and having eight regular, shallow, punctate striæ.

Legs moderate, with the tarsi dark pitchy-brown.

Length $\frac{9}{20}$ inch.

Hab. Batchian, Ternate and Aru. Wallace.

This is a broad, glossy species, of no great size, with a broad thorax. A specimen from Ternate appears to have the foregoing characters, except that the lateral margins of the thorax are less rounded. It can scarcely be considered as a species.

4. *Catascopus splendidus*, W. W. S. (Pl. XVII. fig. 1.)

Above, bright, shining, copper-coloured; the head, thorax and the suture of the elytra with greenish reflections. Underside of body and the legs dark, shining green.

Head slightly contracted behind, with the upper part rounded and uneven with minute undulations, with two rather deep, rounded depressions between the eyes. The antennæ and parts of the mouth nearly black.

Thorax rather broader than the head and somewhat longer than broad, much contracted posteriorly, with the sides narrowly margined and rounded; the anterior angles prominent and pointed, the posterior angles well pronounced; the anterior margin slightly emarginate, the hinder margin nearly straight; the upper surface much rounded, very smooth, with a deep, longitudinal, central furrow, and an elongate, curved depression a little behind the anterior margin.

Elytra broader than the thorax, with the sides parallel, once and a half as long as broad; the shoulders prominent and rounded, with the apices rounded and strongly emarginate, with a broad, sharply-pointed tooth at the commencement of each emargination, and another tooth, rather longer and narrower than the first, at the apex of each elytron; the upper surface very smooth and somewhat undulating, with eight irregular longitudinal striæ, those near the sides slightly punctate.

Legs long, rather slender; tarsi black.

Length $\frac{7}{10}$ inch.

Hab. Sarawack. Wallace.

A fine brilliant species, resembling in colour and form the *C. cupripennis* of Thom., but differing in the much larger size, in the shape of the thorax, which is much broader, and in the character of the upper surface of the elytra, which is more undulating and reflecting the copper tints much more brilliantly.

Supplementary Paper.

[Read 5th January, 1863.]

At the last November meeting of the Entomological Society, I read a paper on the species of the genus *Catascopus* discovered by Mr. Wallace chiefly in the East Indian Islands, describing four new species. Since the paper was read, Mr. Wallace has kindly lent me the whole of the specimens of this genus, forming a portion of his rich private collection, from which I have gained much information regarding the species already described by myself and others; and a careful examination of the series has shown me seven additional undescribed species, as well as some variations in the characters of the determined species which deserve to be noted. In the following pages descriptions of these new species will be found, and also some remarks on the characters of other species just alluded to. As these additional species considerably alter the tables of geographical distribution given in my first paper, I have thought it desirable to give fresh tables, which will be found hereafter. I am indebted to Mr. Wallace for the following interesting remarks on the habits of some of the species of *Catascopus* which he met with while prosecuting his valuable natural history researches in the East.

"The species of the genus *Catascopus* are semi-nocturnal in their habits, never flying except at night. The species taken at Dorey (viz., *Wallacei*, W. W. S.; *elongatus*, W. W. S.; *Aruensis*, W. W. S; *amœnus*, Chaud.) flew against me at dusk. The greater part of the species and individuals I have taken have, however, been captured under the decaying bark of fallen trees.

"As soon as the bark of a tree splits and cracks so as to separate it from the wood, the *Catascopi* frequent it, but I could scarcely ever capture them in that position, owing to their great activity and the force required to tear off the bark. After a tree has lain about a year the bark becomes rotten and can be easily broken off, and then, by the assistance of a net, the insects which lurk beneath it can be more easily captured. The larger species found in Malacca, Borneo and Singapore used frequently to be seen coursing along the surface of some immense fallen trees, from one crack to another, their brilliant bodies glittering splendidly in the sunlight.

"To capture them was by no means easy, as they would get under the trunk where it touched the ground, if closely pursued and no friendly crevice was at hand. Many an hour have I pleasantly spent in hunting them in the dense swampy forests of Borneo. In Malacca and Singapore the spice of fear and danger would be added to the interest of the sport, owing to the probable vicinity of tigers, who might at any moment be watching us as eagerly and with as deadly a purpose as we were watching the poor *Catascopi*.

"However closely pursued I have never seen one of these insects fly in the day time, neither do they come out at all into the light, except to visit some part of the trunk they reside in, to which the subcortical passages do not extend. The beautiful purple-banded species from Borneo, *C. Schaumii*, W. W. S., was brought to me by some Dyaks engaged in felling trees in the swampy forests near Sarawack. The species and individuals of this genus are much more abundant in Malacca and Borneo than in the equally luxuriant forests of the Molucas and New Guinea."

Table showing the geographical distribution of the species of *Catascopus* detected by Mr. Wallace.

Species.	Continent of India.	East Indian Islands.
Schaumii, W. W. S. ..	.....	Sarawack.
Wallacei, W. W. S. ..	.....	Wagiou; Dorey; Mysol.
facialis, Wied.	India, Malacca	Ternate; Batchian; Amboina; Ceram.
angulatus, Chaud.	Malacca	Sarawack; Ternate; Java; Macassar.
Aruensis, W. W. S. ..	.....	Aru; Dorey.
oxygonus, Chaud.	Malacca	Sarawack.
versicolor, W. W. S. ..	.....	Sumatra.
brachypterus, Chaud...	Singapore	Sarawack.
elegans, Chaud.	.....	Celebes; Amboina; Ceram; Batchian; Macassar.
punctipennis, W. W. S.	Singapore	
amœnus, Chaud.....	.....	Dorey; Aru; Tonda; Batchian; Amboina; Ceram.
aculeatus, Chaud.	.....	Celebes; Macassar.
rugicollis, W. W. S. ..	.....	Macassar.
lævipennis, W. W. S. ..	.....	Tonda.
lævigatus, W. W. S. ..	.....	Batchian; Aru; Ternate.
elongatus, W. W. S. ..	.....	Dorey.
cupripennis, Thom.....	Singapore	
æneus, W. W. S.	.....	Sarawack.
splendidus, W. W. S...	.....	Sarawack.

Making nineteen species in all discovered by Mr. Wallace, showing an addition of one species to the continent of India and

six to the East Indian Islands, in excess of those mentioned in my former paper.

Taking the new species into account, the whole number of *Catascopi* now recorded will amount to forty-two, and they are thus distributed :—

Main land of India	9
East Indian Islands	19
West Africa	6
East Africa	2
Tropical America	3
Australia	1
Undetermined	2
	42

1. *Catascopus Wallacei*, W. W. S. (Pl. XVII. fig. 4.)

Colour rich dark purple, with the head black, and the thorax of a brilliant shining copper colour. The parts of the mouth and the antennæ are pitchy-red.

The head is elongate broad, somewhat constricted behind the eyes, which are very prominent, and have between them two deep, elongate, somewhat rough depressions. It is very shining and smooth on the upper surface. The antennæ are rather short and stout.

The thorax is rather broader than the head, transverse, sub-quadrate, with the lateral margins curving inwards towards the base, and having the posterior angles very acute, the anterior angles prominent and slightly rounded, and having also the anterior margin somewhat emarginate and the posterior margin nearly straight. The upper surface is highly polished, marked with very slight transverse striæ, and having a deep central longitudinal depression, terminating a little before the anterior margin, where it spreads slightly on either side.

The elytra are considerably broader than the thorax, with the sides nearly parallel, rounded posteriorly, and the shoulders prominent and rounded. The apex of each elytron is deeply emarginate, with a sharp spine at the commencement and another shorter one at the termination of the emargination on the suture of the elytra. The surface of the elytra is smooth and somewhat shining, each elytron having eight decided, rather shallow, slightly punctate striæ; the 3rd and 4th from the lateral margins being much closer set than the others. Underside of the body smooth and shining.

The legs are rather long, with the joints of the tarsi pitchy-brown.

Length $\frac{7}{10}$ inch.

Hab. Wagiou, Dorey and Mysol. In Mr. Wallace's collection and my own.

This is one of the most beautiful species of the genus, and may at once be distinguished by the brilliant thorax, rich purple elytra, and the length of the spines at the apex of the elytra. I have named it after Mr. Wallace, to whom Entomologists are so much indebted for the discovery of so many new insects, including several of the most beautiful and extraordinary known.

2. *Catascopus versicolor*, W. W. S. (Pl. XVIII. fig. 1.)

Colour rich shining metallic green, with the parts of the mouth, antennæ and tarsi purplish-black, and the elytra suffused with rich copper colour from the apex to nearly $\frac{2}{3}$ of their length.

The head is elongate, somewhat contracted behind, the upper side with two deep rough depressions between the eyes, behind which the surface is very smooth. Antennæ rather thin, about the length of the head and thorax combined. The eyes are prominent.

The thorax is rather broader than the head, cordato-quadrate, with the anterior and posterior margins straight, the angles prominent, and the sides narrowly margined. Above it is quite smooth, with a deep central depression running nearly the whole length, which is deeper and broader anteriorly.

The elytra are considerably broader than the thorax, with the sides nearly parallel and rounded posteriorly, and having the shoulders prominent and somewhat rounded. The apices of the elytra are deeply emarginate and each drawn into a short pointed tooth, and there is also a sharp shortish tooth at the commencement of each emargination. The upper surface of each elytron is marked with eight deep, longitudinal, punctate striæ; the 3rd and 4th from the suture the widest apart; the 4th and 5th close to each other, and so also the 6th and 7th, which are nearly as closely set. The underside of the body is purplish-black.

The legs are moderate in length.

Length $\frac{5}{10}$ inch.

Sumatra. In Mr. Wallace's collection.

A species of moderate size, coming near to *C. oxygonus* of Chaudoir, but differing in the emargination and spines at the apex of the elytra and the deeply punctate striæ of the same.

3. *Catascopus rugicollis*, W. W. S. (Pl. XVIII. fig. 6.)

Colour dark bronzy-green, with the thorax slightly suffused with copper colour, and having the parts of the mouth, antennæ, legs and underside of the body shining purplish-black.

The head is elongate, somewhat constricted behind, with the upper surface shining, minutely rugoso-punctate, and with two rough, shallow depressions in front, nearly in a line with the base of the antennæ, from which proceed narrow, line-like depressions, running close to and nearly encircling the eyes. Antennæ stout, and rather short. Eyes prominent.

The thorax is transverse quadrato-cordiform, with the anterior and posterior margins straight; the angles prominent, the sides narrowly margined, and curving inwards towards the base. The upper surface is deeply and transversely striate, with a well-marked central longitudinal depression running from the base to near the anterior margin, where it branches right and left, and passes on to the anterior margin, enclosing a smooth, broadly triangular area.

The elytra are considerably wider than the thorax, once and a half as long as broad, with the sides nearly parallel and slightly emarginate a little behind the shoulders, which are somewhat prominent and rounded. Each elytron is produced into an acute, somewhat diverging spine, the apex being rounded and slightly emarginate before the spine is reached. The upper surface of the elytra is smooth and shining; each elytron with nine, nearly equally spaced, longitudinal, slightly punctate, shallow striæ.

The underside of the body is smooth and shining.

Legs moderate in length.

Length $\frac{4}{10}$ inch.

From Macassar. In Mr. Wallace's collection.

This species is near *C. aculeatus*, Chaud., but may at once be distinguished by the shape and sculpture of the thorax.

4. *Catascopus punctipennis*, W. W. S. (Pl. XVIII. fig. 4.)

The colour is rich, shining, brassy-green, with the parts of the mouth, antennæ, underside of the body and tarsi purplish-black.

The head is elongate, constricted behind the eyes, with the upper surface longitudinally, but irregularly, striate, and much more deeply so in front, where it is very rugose. The eyes are rather small and prominent.

The thorax is rather longer than broad, quadrato-cordate, about as broad as the head, with the anterior angles rounded, the hinder angles prominent, the sides narrowly margined, the anterior margin straight, and the posterior slightly rounded. The upper surface

is very rounded and polished, and slightly transversely striate, with a deep, central, longitudinal depression, rather wider towards the anterior margin.

The elytra are much broader than the thorax, about once and a half as long as broad, the sides nearly parallel, but slightly emarginate a little behind the prominent shoulders; they are rounded posteriorly and emarginate towards the apex of each elytron, each emargination having a very short, broad tooth at its commencement. The upper surface of each elytron has nine deeply and coarsely punctate striæ, nearly equally spaced, the fourth from the suture being widened and deeper, about one-third its length from the base.

Legs moderate in length, stout.

Length $\frac{4}{10}$ inch.

From Singapore. In the collection of Mr. Wallace, and in my own.

This is a rather small species, with narrow thorax and broad elytra. It comes close to *C. elegans*, Chaud., from which it may be distinguished without difficulty by the shape of the thorax, which in *C. elegans* is much more quadrate, by the prominent angles of the thorax, and also by the sculpture of the elytra, which is much more decided as regards the punctured striæ.

5. *Catascopus lævipennis*, W. W. S. (Pl. XVIII. fig. 3.)

The colour of the head and thorax is brilliant metallic shining green; the elytra bronzy shining green; the parts of the mouth, antennæ, underside of the body and legs, purplish-black.

The head is elongate, rather constricted behind the eyes, having the space between the eyes rugosely punctate, with the longitudinal depressions running through the punctate space and dividing it into three nearly equal bands, the depressions passing behind the eyes, where they run into a series of irregular furrows, formed by raised irregular lines. Eyes somewhat prominent. Antennæ robust, rather short.

The thorax is rather broader than the head, cordato-quadrate, much narrowed behind and rounded at the anterior angles, having the hinder angles prominent and somewhat pointed; the anterior and posterior margins straight, and the sides narrowly margined. The upper surface is clavated and rounded in the centre, very smooth and shining, with a narrow central longitudinal depression.

The elytra are much broader than the thorax, about once and a half as long as broad, with the sides nearly parallel, and slightly emarginate behind the rounded shoulders, having the apices

rounding gradually to a point, on which is situated a short, sharp, somewhat diverging tooth, and before which there is a distinct emargination, with a very short angular tooth at its commencement. The upper surface of the elytra is smooth and shining, each elytron having nine nearly equally spaced, longitudinal, punctate striæ; the first three striæ from the suture being faintly impressed, the others more decided. The underside of the body is smooth and somewhat shining.

Legs moderate.

Length $\frac{4}{10}$ inch.

From Tonda. In Mr. Wallace's collection.

This is another species nearly allied to *C. aculeatus*, Chaud., from which it may be distinguished by the narrow thorax, more restricted posteriorly, by the nature of the emargination at the apices of the elytra, and by the smaller size of the insect. The tibiæ and tarsi of this species are sometimes rather ferruginous in colour.

6. *Catascopus elongatus*, W. W. S. (Pl. XVIII. fig. 5.)

The colour of the head is metallic shining green; thorax bright copper-colour; elytra steel-blue. The parts of the mouth, antennæ and legs are dark pitchy-red.

The head is elongate, a little restricted behind the eyes, having on the upper side, in front, two narrow longitudinal depressions close to the eyes, and passing forward to the base of the mandibles; the hinder portion of the upperside is rounded, and very smooth and shining. The antennæ are short, and not very stout.

The thorax is transverse, subquadrate, rather broader than the head, with the sides margined and curving outwards, each with two long hairs, one placed near the middle, and the other quite in front; the angles of the thorax are prominent, the posterior ones more decidedly so; the anterior and posterior margins are straight; the upper surface is rounded, shining, very slightly transversely striate on the disc, but more strongly so near the sides, with a narrow central, longitudinal depression crossing it entirely.

The elytra are rather broader than the thorax, nearly twice as long as broad, with the sides straight and nearly parallel, and having the apices rounded and emarginate, but without tooth-like projections. The upper surface of the elytra is rounded, and regularly punctate-striate; the striæ, nine in number, being very equally spaced on each elytron.

Legs rather short.

Length $\frac{3\frac{1}{2}}{10}$ inch.

From Dorey. In Mr. Wallace's collection.

This is a remarkable species, elongate in form, with small head and broad square thorax. It seems to run away from the normal *Catascopus*, but has so many of the characters of the genus that I prefer placing it as a *Catascopus* to increasing the number of genera in this family of insects—genera which seem to run into each other by such fine lines of demarcation that it is very difficult to say where one commences or another ends. The general imprint of similarity which nature throws over a certain group of species seems often to point out genera better than any rigid characters or forced lines of partition. The species under consideration stands alone, and is not likely to be confounded with any other that I am acquainted with.

7. *Catascopus æneus*, W. W. S. (Pl. XVII. fig. 2.)

The colour of the head, elytra and thorax is a bright, shining, bronzy green, the latter with the sides margined with copper colour; the parts of the mouth, antennæ, tibiæ and tarsi purplish-black, the former with the six apical joints inclining to rufous.

The head is elongate, slightly constricted behind the eyes, the upperside very polished and shining, and having two longitudinal depressions between the eyes, running into an undulating space immediately in front. The eyes are small and prominent. The antennæ are rather long and stout.

The thorax is about as broad as the head, elongate quadrato-cordiform, much contracted posteriorly, with the angles acute and prominent; the sides are narrowly margined, the anterior margin curves slightly inwards, the posterior margin is straight. The upper surface is very smooth and shining, with a central, narrow, longitudinal depression running from the base to near the anterior margin, where it forks right and left towards the anterior angles.

The elytra are broader than the thorax, about once and three-quarters as long as broad, with the sides nearly parallel, slightly swelling out a little below the middle; the shoulders are prominent and rounded. The apices of the elytra are rounded, and rather deeply emarginate, with a broad pointed tooth at the commencement of the emargination, and a small tooth at the apex of each elytron. The upper surface of the elytra is smooth and shining, each elytron having nine, nearly equally spaced, longitudinal, shallow, finely punctate striæ, which, near the shoulder and on the sides, are slightly waved in outline. The underside of the body is bronzy-green, smooth and shining.

Legs long and rather slender.

Length $\frac{7}{10}$ inch.

From Sarawack. In Mr. Wallace's collection.

This species comes near to *C. splendidus*, described in my former paper. At first I thought it was a variety of that species, but on close examination there are characters which distinguish it, as well as the difference of colour and its want of brilliancy. The distinguishing characters are, the thorax broader and less narrowed posteriorly, the elytra with the striæ nearly equally spaced, and the upper surface of the same not undulating. This species, *splendidus* and *cupripennis*, form a well-marked section of the genus, almost entitled to generic distinction.

Notes on some of the already described Species of Catascopus.

1. *Catascopus facialis*, Wied.

Many specimens of this species were collected by Mr. Wallace, and present variations in size as well as in the shape of the thorax, some having this part of the body more contracted posteriorly than the others, with the hinder angles a little more prominent. A specimen from Batchian has a purplish tint in the shape of an indefined band across the apical half of the elytra.

2. *Catascopus amœnus*, Chaud.

This species varies considerably in colour, in tints from bronzy to bright coppery-green. The legs, in a specimen from Dorey, are bright rufous-brown.

3. *Catascopus oxygonus*, Chaud.

This species varies much in size, and the thorax is narrower in some specimens than in others.

4. *Catascopus brachypterus*, Chaud.

A specimen from Malacca, collected by Mr. Wallace, is nearly double the size of two specimens I have examined, one from Singapore, the other from Sarawack. It is also of an uniform bright metallic-green. I cannot find, however, any characters to distinguish it as a species.

DESCRIPTION OF THE PLATES.

Plate XVII.

Fig. 1. *Catascopus splendidus*, 1 *a* thorax, 1 *b* elytron, magnified.
2. ——— *æneus*, 2 *a* „ 2 *b* „ „
3. ——— *Schaumii*, 3 *a* „ 3 *b* „ „
4. ——— *Wallacei*, 4 *a* „ 4 *b* „ „
5. ——— *Aruensis*, 5 *a* „ 5 *b* „ „

Plate XVIII.

Fig. 1. *Catascopus versicolor*, 1 *a* thorax, 1 *b* elytron, magnified.
2. ——— *lævigatus*, 2 *a* „ 2 *b* „ „
3. ——— *lævipennis*, 3 *a* „ 3 *b* „ „
4. ——— *punctipennis*, 4 *a* „ 4 *b* „ „
5. ——— *elongatus*, 5 *a* „ 5 *b* „ „
6. ——— *rugicollis*, 6 *a* „ 6 *b* „ „

XXXVII. *Observations on Ants of Equatorial Africa.* By Frederick Smith, Esq., Pres. Entom. Soc.

[Read 5th January, 1863.]

In the "Explorations and Adventures in Equatorial Africa," by M. du Chaillu, the seventeenth chapter is devoted to the ants of that region; the author informs us that he is acquainted with ten species, and then proceeds to give some account of the habits of the more remarkable ones; particularizing the Bashikouay ant, the Red ant, the Nchellelay, the Little ant, the Red-leaf ant, and the Nest-building ant.

I have been fortunate enough to have an opportunity of examining some specimens of an ant, which I think I shall be able to identify with the Bashikouay ant; and also to prove that it is a species of the genus *Anomma;* not having any relationship with the insect figured in M. du Chaillu's book, which is not an ant at all, but a large worker, or soldier, of some species of *Termes.* The specimens of the Bashikouay ant which I have examined were found in the skin of a large Gorilla, lately imported into this country.

The following is a description of the ant:—

Destitute of eyes; of a semi-opake dull red; the head and mandibles darker than the body; the head slight, widest in front in small specimens; in the large workers or soldiers, it is oblong-quadrate; the sides being parallel, with a faint contraction in the middle; the mandibles curved, with an acute tooth in the middle of their inner margin, their apex acute; the head very large, more than twice the width of the thorax, and deeply emarginate behind; two teeth on the pectus, at the base of the middle coxæ.

In the fourth volume of "The Proceedings of the Academy of Natural Sciences of Philadelphia," Dr. Savage has described one of the travelling ants of Equatorial Africa, which he names *Anomma rubellum*, and thus briefly describes:—"rubrum, subnitidum, antennis, coxis, geniculis tarsisque rubris, versus marginem diaphanis." The habitat is the west coast of the Gaboon river, near the equator.

Dr. Savage then proceeds to give a very interesting account of the habits of the *Anomma;* the following is a brief abstract of some of its more remarkable features:—

They are exceedingly ferocious, have no permanent dwelling,

but wander about in search of prey; should they in their progress be exposed to the heat of the sun, they construct arches or covered ways, of agglutinated sand or earth. They kill and carry off their prey, tearing it into pieces. Their hold is very tenacious; they never leave go except when their head is torn from their body. If a small stream intercept their march, they compass it by throwing across a bridge of their own bodies, over which the whole column passes. The dread of them rests on every living thing, they drive everything before them capable of motion; the entrance of these ants into dwellings is instantly known by the simultaneous movements of rats, mice, lizards, cockroaches, &c.: even man bows to this numerous foe. By accumulation, its bite is fatal to the largest animal. The native account of these ants is, that they sometimes attack and destroy the great *Python Natalensis*.

Such is the history, or rather a part of it, as detailed by Dr. Savage; we shall now proceed to extract the principal or more remarkable portions of M. du Chaillu's narrative, premising that its close resemblance to the above is truly remarkable, not only in the similarity of events, but particularly so for the exact uniformity in which they succeed each other.

"The Bashikouay ant is very abundant in the whole region of Equatorial Africa, and is the most voracious creature I ever met with. I do not think they build a nest of any kind, nor do they carry away prey of any kind, but eat all on the spot; they march through the forest in long regular lines about two inches broad, very often several miles in length. All along this line are larger ants, that act as officers and keep the army in regular order. If they come to a place where there is no shelter from the sun, they build under-ground tunnels from four to five feet under ground; through this the whole army passes. When hungry, they attack and devour everything that falls in their way. The elephant and gorilla fly before them; the black men run for their lives. They seem to travel by night and by day; when they enter a house they clear it of all living things,—cockroaches, rats and mice spring round the room in vain; an overwhelming force of ants kills a strong rat, in less than a minute its bones are stript. When on a march the insect world flies before them, and I have often had the approach of the Bashikouay army heralded by these means.

"Their manner of attack is an impetuous leap; instantly the strong pincers are fastened, and they only let go when the piece gives way. Two very remarkable practices of theirs remain to be

noticed; when on their line of march a narrow stream requires to be crossed, they throw themselves across and form a tunnel,—a living tunnel,—connecting two trees or high bushes on opposite sides of the stream; this is done with great speed and is effected by a great number of ants, each of which clings with its fore-claws to its next door neighbour's body, or hind claws; thus they form a high, safe tubular bridge, through which the whole vast regiment marches in regular order.

"They are at least half an inch long, and are armed with powerful fore-legs and sharp jaws. They are red or dark-brown in colour. Their numbers are so great that one does not like to enter into calculations; but I have seen one continuous line passing at a good speed a particular place for twelve hours."

That the Bashikouay ant is identical with the *Anomma rubellum*, I have not any doubt whatever, and I am equally satisfied that the ants which were found in the folds of the skin of the Gorilla are identical with Dr. Savage's insect.

I have previously remarked upon the singularity of the two accounts by Dr. Savage and M. du Chaillu, corresponding in so remarkable a degree in the order of succession in which the various portions of the history of the economy of the ants is related. We have now for a minute to point out in what they really differ: First, then, we are told by Dr. Savage that they carry off their prey; this is certainly the habit of every ant we have ever seen or read of; M. du Chaillu says they do not carry away prey of any kind, but eat all on the spot. In the next place Dr. Savage says, "if they are in their progress exposed to the heat of the sun, they construct arches, or covered ways;" M. du Chaillu tells us, they "build under-ground tunnels from four to five feet under ground;" certainly very remarkable and unnecessary, if a covered way answers the purpose. Dr. Savage next informs us that, "if a small stream is to be passed, the ants throw a bridge of their own bodies across, over which the army passes." In what does M. du Chaillu differ in his account? He says, when a narrow stream is to be crossed, they throw themselves across and form a tunnel,—a living tunnel,—a tubular bridge, through which the whole vast regiment passes; these regiments, he tells us, are sometimes twelve hours in passing. I cannot imagine how the tubular bridge is formed at all, and, if formed, how it is kept intact without collapsing, particularly if the army were to be twelve hours in passing through it.

After a careful comparison of M. du Chaillu's account of the Bashikouay ant with that by Dr. Savage of *Anomma rubellum*, I can-

not but entertain a strong suspicion that M. du Chaillu has availed himself of Dr. Savage's narrative; the incidents follow in the same order of succession, and it appears to me, that so long as the narrative is strictly adhered to, nothing causes us to doubt its accuracy; but when it is departed from, and we are told that ants, in order to avoid the sun, excavate a tunnel four or five feet deep; and that these ants, contrary to the recorded habit of *Anomma rubellum* and also of *Anomma arcens*, feed upon and devour their prey on the spot; and that, in lieu of a suspended bridge of ants, a tubular bridge is constructed, I begin to suspect the whole account to be a plagiarism, distorted by exaggerated impossibilities.

The Red or little House Ant is, no doubt, a species of *Myrmica*.

The Black Ant.—This lives in rotten trees, hunts singly, does not attack unless disturbed; its bite (sting?) is very painful. (Probably a species of *Ponera*.)

The Red-leaf Ant.—The habits of this ant are precisely those of the green ant, so well known in the tropics; it glues a number of leaves together on trees and bushes, and so forms its nest. This is, I suspect, a species of *Œcophylla*.

The common Black Sand Ant.—Next to the Bashikouay, the most to be dreaded; it is solitary, and not numerous; its bite (sting) is not felt at the time, but is shortly succeeded by distressing pain, lasting many hours, as virulent as the sting of a scorpion. (Probably a species of *Ponera*.)

Nest-building Ant.—Builds an ingenious hanging nest, suspended from trees, two feet long by one in diameter, constructed of leaves, the tiers of which overlap so as to carry off the rain; the leaves do not touch each other, and thus keep up a fine ventilation. (Probably a species of *Œcophylla*.)

Small underground Bashikouay.—Lives in houses, does not appear until food is smelt, when they appear in thousands. (A species of *Myrmica*?)

The large Red Ant.—The largest of the African ants; does not attack man; is a night ant, never seen by day, avoids light; very fond of cooked meat; it chooses its habitation in dark corners and hidden closets, where light will not disturb it. (A *Ponera*?)

XXXVIII. *Notes on* Omalium riparium, Homalota lævana, H. dilaticornis *and* H. nigritula. By G. R. Waterhouse, Esq., V.-P. Z.S., &c.

[Read 5th January, 1863.]

Omalium riparium, Thomson, Ofv. af Vet. Ac. Förh. 1856, 224, 3: Skandinaviens Coleoptera, tom. iii. p. 212, 3.—1861.

In average size this insect is a trifle larger than *O. rivulare*: it differs from that species in being almost invariably of an uniform pitchy black colour (elytra rarely piceous), with the exception of the legs and one or two basal joints of the antennæ, which are rufous. The punctuation of the upper parts is rather less dense and less strong. The foveæ on the head are less strongly impressed, and rather more widely separated, so that the mesial raised area is broader; the neck is dull, being distinctly alutaceous, and has very few minute punctures, whilst the more glossy neck of *O. rivulare* has numerous strong punctures; the antennæ, without being stouter, are rather longer. The thorax is broader, and both the lateral and dorsal foveæ are larger. In *O. rivulare* the lateral impressions extend forwards from the base to the middle of the thorax, are glossy and strongly punctured, whilst in *O. riparium* the corresponding impressions extend forwards about two-thirds of the length of the thorax, are dull (being very distinctly alutaceous), and present comparatively few small punctures. Again, in *O. rivulare* there is a groove containing a row of strong punctures running parallel with the posterior margin of the thorax, and between this and the margin itself is a glossy ridge—neither the groove nor the ridge exists in *O. riparium*. Lastly, the elytra are longer, and have the external apical angle more obliquely truncated. In most of the above points of distinction *O. riparium* presents characters which approximate it to *O. læviusculum*, but this last-mentioned species is larger, very generally has the thorax and elytra more or less pitchy—and not unfrequently these parts are rufo-piceous; its punctuation is very decidedly finer and more scant; the thorax is distinctly dilated in front (which is not the case in *O. riparium*); the lateral margins are sinuated behind so as to leave the posterior angles

slightly prominent; and the foveæ on the upper surface are smaller and less strongly marked. Lastly, the antennæ are both longer and stouter.

I may here state that the insect described by Dr. Kraatz under the name *Omalium fucicola* agrees with the species which I regard as the true *O. lævisculum*. *O. fucicola*, Kraatz (Stett. Ent. Zeit. 1857, p. 286), founded upon specimens taken upon the coast of Iceland, was subsequently supposed by its describer (see Berlin, Ent. Zeitschr. 1858, p. 378) to be identical with the *O. lævisculum* of Gyllenhal (Ins. Suec. iv. p. 464), and is further stated by him to be the same as *O. monilicorne* of Fairmaire. Thomson gives the *O. fucicola* as identical with his *O. riparium;* and, in the last edition of Schaum's Catalogue, the two names are likewise united as belonging to the same species. Thomson's descriptions, however, show that (compared with the *O. lævisculum*) his *O. riparium* is the smaller and darker-coloured insect; and has the elytra more thickly and distinctly punctured: that *O. lævisculum* is more subject to variation in colouring, and especially presents varieties with the thorax more or less rufescent; and, lastly, we may infer that it has longer antennæ, for in the description of *O. riparium* he says, "*antennæ prothoracis basin vix attingentes, articulo 4to haud transverso;*" whilst in the short description of *O. lævisculum* we find "*antennis articulis* 4—6 *oblongis*" given, as it would appear, as a character serving to distinguish that species from *O. riparium*.

In the British Museum Collection is a considerable series of specimens, from Iceland, sent by Dr. Kraatz as his *O. fucicola*, and it is upon a careful examination of these specimens that I have arrived at the conclusion above stated.

The *O. lævisculum* then has an enormous range of latitude, being found in the south coast of England (Isle of Wight), and extending to the extreme north of Norway, and north-westwards to Iceland. The *O. riparium* I have found pretty plentifully under sea-weed near Southend, and likewise near Strood. Mr. Rye informs me that he has received it from Mr. Bold as found near Newcastle. Thomson obtained the species from the southernmost part of Sweden, and likewise from Lapland.

Homalota lævana, Mulsant, Opusc. Entom. i. 39, 18, t. 1, f. 12; Kraatz, Ins. Deutschl. p. 306, 116.

This is a somewhat slender insect with moderately long black antennæ, the three basal joints of which are elongated, the intermediate joints all of them very nearly equal in width, and quadrate,

or nearly so. Head nearly round and convex; the eye but little prominent, the surface very delicately and rather sparingly punctured. Thorax distinctly narrower than the elytra, moderately transverse, pretty thickly and distinctly punctured; and, besides the ordinary pubescence, with three or four setæ on each side. Elytra about one-fourth longer than the thorax; finely and thickly punctured. Abdomen slightly dilated in the middle, with the basal joints pretty thickly and distinctly punctured; the 5th and 6th joints nearly smooth. The head and thorax are black, with an indistinct æneous tint; the elytra are brown, with the outer margin dusky: the abdomen black. The legs fusco-testaceous, with the femora rather darker than other parts; they are distinctly pubescent, and the tibiæ are furnished with setæ: one, at least, of these longer hairs may be seen on the intermediate tibiæ, and two on the posterior tibiæ. The species most nearly resembles *H. marcida*, but is a trifle smaller: he thorax is rather shorter, has the sides less rounded, and not contracted behind; the elytra are less ample, and rather more finely punctured. The antennæ in both sexes closely resemble those of the female of *H. marcida*, excepting that the basal joints are dark instead of being pale. The male of *H. marcida** is remarkable for having the third joint of the antennæ somewhat inflated, and with a width fully equal to, if not exceeding, that of any of the following joints; the two basal joints are somewhat stouter than the corresponding joints of the female, and so are the fourth and fifth joints. I can perceive scarcely any sexual distinction in the penultimate abdominal segment of this species. In *H. lævana*, a male specimen, from Dr. Kraatz, has the upper plate of the penultimate segment truncate at the apex, and with three very gentle emarginations (of which the central one is the broadest) separated by very small obtuse teeth.

I have seen but two English specimens of *H. lævana;* they were both found by Dr. Power--one specimen in Highgate Wood, the other at the Holt Forest.

Homalota dilaticornis, Kraatz, Naturgesch. der Insecten Deutschl. p. 293, 102.

The insect exhibited is a trifle smaller and relatively narrower than the *H. nigritula*, and has the antennæ shorter and stouter.

* In the males of some other species the 3rd joint of the antennæ is somewhat incrassated. In *H. nigricornis* (*fungicola*, Thoms.), for example, this distinction is evident. In *H. marcida* the sex with the more slender antennæ is regarded as the male by Dr. Kraatz.

I compare it with *H. nigritula*, because that is with us a common insect, but its resemblance to *H. subterranea* is far greater; indeed I at first sight mistook it for that insect, but upon comparison found it might be readily distinguished by its remarkably stout antennæ, as well as by its male characters. The head is pitchy-black; the thorax and elytra, as well as the apex of the abdomen, are fusco-rufous, the external apical angle of the elytra, however, somewhat dusky; the basal segments of the abdomen are more or less piceous, or rufo-piceous; the legs, parts of the mouth, and one or two basal joints of the antennæ, are testaceous; the remaining joints of the antennæ are more or less dusky, but the terminal joint is sometimes less dark. The two basal joints are but little elongated; the 1st joint is stout; the 2nd is rather less stout and shorter; the 3rd smaller than the 2nd, obconic; the 4th scarcely broader than the 3rd, but distinctly transverse; the 5th (which is nearly double the bulk of the 4th) to the 10th joints are all greatly dilated, being at least twice as broad as long, but the greatest width is attained by the 7th joint; the terminal joint is conical. The head is nearly round, decidedly narrower that the thorax, convex above, and very finely punctured. Thorax transverse, the sides moderately rounded, the fore part slightly contracted, the surface convex (without fovea or groove), moderately glossy, very finely, but not very thickly punctured; two small setæ are seen on the sides, one near the middle, and the second near the anterior angle. Elytra about one-fourth longer and but little broader than the thorax; like the thorax, they are well clothed with palish pubescence, finely punctured, but the punctures are but moderately dense. Abdomen with scattered punctures on the basal segments, the 5th and 6th segments destitute of punctures, or very nearly so. The upper plate of the penultimate abdominal segment in the male presents a small notch on either side, and the notch is bounded externally by a small acute tooth; the middle portion of the plate is produced considerably beyond the tooth, and is somewhat contracted in width posteriorly. On the same transverse line as the lateral notches are seen two transverse tubercles, which are pretty widely separated from each other; and from each of these tubercles, a delicate raised line extends outwards, and at the same time curves backwards, to join the outer margin of the segment, and indeed forms the whole outer boundary of the apical portion of the plate: this latter is obtusely notched at the apex. The surface of the segment being alutaceous, and consequently somewhat dull, the raised glossy

line, united as it is with the two tubercles, forms a figure which, when the insect is placed so that the apex of the abdomen points to the right, rudely represents the figure 3. In the male *Homalota subterranea*, the corresponding segment presents a structure analogous to that just described, but here the middle portion is not produced beyond the lateral spines, and the two tubercles are wanting.

In comparing the foregoing description with that given by Dr. Kraatz of *Homalota dilaticornis*, certain points of disagreement will be noticed. In the first place the general colouring of the insect would appear to be somewhat darker than that indicated by Dr. Kraatz by the term "rufo-testacea;" but the several specimens taken by Dr. Powér differ considerably in colouring, one being of a pale testaceous tint, with the head, and a broad band on the abdomen, black: I have taken a medium condition for my description. Secondly, no mention is made by Dr. Kraatz of any tubercles on the upper surface of the penultimate abdominal segment of the male: it is possible however the segment was partly hidden in his specimens. Thirdly, the elytra are given by the author mentioned as about half as long again as the thorax; this would make those organs rather more ample than in the insect described by me.

Several specimens of this species have been taken near Mickleham by Dr. Power, at different times, in the vicinity of the nests (or rather of the runs) of the great black ant (*Formica fuliginosa*).

Homalota nigritula.

We have in England two nearly allied species of *Homalota* standing in my Catalogue as *H. nigritula* and *H. liturata*. The former agrees very closely with the description of *H. nigritula*, as given by Dr. Kraatz, with this exception—that the antennæ are dusky, and have only the two basal joints more or less testaceous, whereas in the Latin diagnosis in the "Insecten Deutschlands," the antennæ are described as "*luteo-testaceis;*" and, in the detail description, as "mehr oder minder gelblich braun, an der Basis heller." This latter phrase indicates that in the colouring of the antennæ a certain amount of variation was found, yet it was with some hesitation that I ventured to attach the name *nigritula* to my insect, more especially as the older descriptions of Gravenhorst and Gyllenhal agreed in attributing uniformly pale antennæ to the *Aleoch. nigritula* of their works.

Now the *Bolitochara liturata* of Stephens (*Homalota* id. of my Cat.) has the antennæ entirely pale, and in other respects seems to agree well with the descriptions given by the two authors last mentioned. But this insect, in the male sex, presents some well-marked characters in the penultimate abdominal segment, a part which was overlooked by Gravenhorst and Gyllenhal. Kraatz, however, describes the abdominal segment (in *H. nigritula*) in the following terms:—"beim Männchen ist der Hinterrand der oberen Platte des vorletzten Hinterleibssegmentes mit zwei, etwas weiter von einander als vom Seitenrande abstehenden, etwas vorspringenden, erhabenen Höckerchen versehen und zwischen denselben sehr leicht ausgebuchtet." This description could not have been taken from the male *H. liturata*, but belongs to the male of my insect first noticed, and with the dark antennæ: here I find the abdominal plate furnished at the apex with two small prominences, rounded and incrassated at the extremity, rather more widely separated from each other than from the lateral margin, and with a very gentle emargination between them: external to these again on either side is a small notch, leaving the apical outer angle prominent, but obtuse; so that the plate may be described as having four small obtuse teeth at its extremity, these all terminating in the same transverse line: from the outer tooth a short ridge runs directly backwards on to the segment on either side. English specimens named by Dr. Kraatz, in my own collection and that of Mr. Wollaston, presented these peculiarities, including the dark antennæ. The insect is common with us, widely distributed, and found in fungi. I knew no species presenting the male characters just described, and which at the same time had the antennæ entirely pale (nor do I up to this moment, either by description or otherwise), and I adopted this, then, as the *H. nigritula*. Four specimens subsequently sent by Dr. Kraatz to the British Museum as his *H. nigritula*, I find all have the antennæ dusky—they in fact agree with the *H. nigritula* of my Catalogue.

In the last edition of Schaum's Catalogue (1861), two species are found under the name *H. nigritula*, one being regarded as the *H. nigritula* of Gravenhorst, with which are identified the *H. erythrocera* and *H. pubescens* of Heer, as well as the *H. boletobia* of Thomson. The other is regarded as the *H. nigritula* of Gyllenhal and Thomson. I know not upon what grounds these conclusions are arrived at. As regards the *H. erythrocera* and *H. pubescens* of Heer, Dr. Kraatz states (after having examined specimens of the two species forwarded to him by Heer), that

they do not appear to him to differ from his *H. nigritula*. But the former of these insects is described as having the antennæ entirely pale, whilst in *H. pubescens* the antennæ are given as "*nigræ, basi testaceæ*." Again, in the *H. boletobia*, the antennæ are described by Thomson as "*nigro-fuscæ, basi testaceæ*," whilst the same author uses the term "*flavis*" to indicate the colour of the antennæ in his *H. nigritula*.

It seems then clear that Dr. Kraatz does not consider the insect with the dark antennæ as distinct from that in which the same organs are entirely pale.

By Thomson both species are made to form part of a small section partly characterized by a quadri-denticulate penultimate abdominal segment in the males; and from his description of *H. nigritula* we learn that that species has the middle pair of teeth widely separated by a semicular emargination. This cannot apply to the *very* gentle curve seen between the corresponding teeth in *H. nigritula* of Kraatz, but very nearly corresponds with the conditions presented by our *H. liturata*. In this insect the truncated end of the upper plate of the penultimate abdominal segment exhibits a deep, and very nearly horseshoe-shaped, mesial emargination, and an obtusely bidentate lobe on either side; the width of each lobe being very nearly equal to that of the central notch.

Neither Gravenhorst, Gyllenhal nor Heer describe the male characters of the insect which stands in their works under the specific name "*nigritula*," nor does Heer furnish us with the male peculiarities of his *H. erythrocera* and *H. pubescens;* hence I am unable quite to satisfy myself with regard to the identification of those species, but I think it probable that the synonymy should stand thus :—

1. *Homalota nigritula*, Heer, Faun. Col. Helv. i. 331, 28 (1839).
——————————, Thoms. Ofv. af Vet. Ac. Förh. (1852), 141, 37.
——————————, Kraatz, Ins. Deutschl. p. 276, 84 (in parte) (1858.)
Atheta nigritula, Thoms. Skand. Coleopt. iii. 80, 28 (1861).
Aleochara nigritula, Grav. Micr. 84, 25 (1802).
——————————, Gyll. Ins. Suec. ii. 408, 29 (1810).
——————————, Steph. Illustr. Mand. v. 142, 102 (1832).
—— —— *liturata*, (Kirby) Steph. Illustr. Mand. v. 142, 104.
Homalota ——————, Waterh. Catal. of Brit. Col. p. 18, No. 59.
—— —— *erythrocera*, Heer, Faun. Col. Helv. i. 329, 19.

2. *Homalota pubescens*, Heer, Faun. Col. Helv. i. 329, 22.
——— *boletobia*, Thoms. Ofv. af Vet. Ac. Förh. (1856), 96, 13.
Atheta ———, Thoms. Skand. Coleopt. iii. 78, 26.
Homalota nigritula, Fairm. et Laboulb. Faun. Ent. Fr. iii. 416, 75 (1854).
———————, Kraatz, Ins. Deutschl. p. 276, 84 (in parte).
———————, Waterh. Catal. of Brit. Col. p. 18, No. 50.

XXXIX. *On the Geographical Distribution of European* Rhopalocera. By W. F. Kirby, Esq.

[Read 5th January, 1863.]

Important as a knowledge of the geographical distribution of species in different parts of the world is, the subject has been greatly neglected, at least among Entomologists generally, though the Germans have paid some attention to it. It would require a much greater knowledge of exotic species and Entomological bibliography than I can pretend to, to give anything like an adequate idea of the distribution of the whole of the *Rhopalocera*; however, I have recently been studying that of the European species, and have accumulated sufficient data for a paper on the subject. At the same time I do not intend to exclude all reference to species not occurring in Europe, but the distribution of which is worthy of notice.

In order to make myself perfectly intelligible, it will be as well to state plainly what I mean by the terms "species," "variety," &c., throughout the present paper. A variety is simply an unusual departure from the normal form or colouring of an insect, caused by accidental circumstances acting on one or two individuals of a race only, and not affecting the majority of the species. A permanent variety is a variation affecting a considerable number of individuals of a species, but not all,

so that the variety occurs in company with the type. A SEXUAL VARIETY only differs from a permanent variety in occurring only in one sex. A SUB-SPECIES is a permanent variety linked to its nearest ally by intermediate forms, but which entirely replaces the type in the localities in which it occurs. A sub-species is not a true species, but under favourable circumstances it will become so in time, as the varieties intermediate between itself and the parent or cognate species die out. Finally, a SPECIES is a form varying comparatively little in most cases, and generally distinguished from its nearest allies by constant differences in the larva as well as the imago.

In my recently published "Manual of European Butterflies" now on the table, I divided Europe into thirteen arbitrary divisions, for the purpose of better illustrating the geographical distribution of the species; and before entering into their universal range, I wish to generalise a little on the results I arrived at. My information respecting Scandinavia, South Russia, Spain, France, Britain, Austria and Switzerland is very complete; with respect to the other seven divisions I must generalise with caution.

I. ICELAND.—No more than six species of diurnal *Lepidoptera* are known to me to occur in this country, viz., the polar sub-species* of *Colias Palæno* and *Phicomone*, *Colias Hecla*†, *Argynnis Freyja*, and *Chionobas Jutta* and *Œno*. These are all northern species, and are confined in Europe to Iceland and Lapland, with the exception of *Colias Palæno* and *Phicomone*, which are mountain insects further to the south.

II. SCANDINAVIA, comprising Norway, Sweden, Lapland and Finland.—One hundred and twelve species out of the 321 European species occur in this province; nine of these appear to be peculiar in Europe to this district; thus leaving 103 occurring in other countries. All our British species occur in this district except *C. Edusa*, *C. Hyale*, *L. Sibylla*, *A. Iris*, *M. Galathea*, *H. Tithonius*, *E. Epiphron*, *E. Medea*, *P. Corydon*, *P. Ægon*, *P. Actæon*, and *C. Paniscus*. The three latter species are represented in Scandinavia by their nearest allies, which do not appear to occur with us, though two have been reputed British. Thus, *P. Ægon* is replaced by *P. Argus*, *P. Actæon* by *P. Lineola*, and *C. Paniscus* by *C. Sylvius*.

* I refer to *Colias Pelidne* and *C. Nastes*, which however may very possibly be good species.

† Having recently had an opportunity of examining some specimens in the possession of Mr. Doubleday, which are undoubtedly the true *C. Hecla* of Lefebvre, I am now satisfied that the insect I described in my "Manual" with some hesitation as that species is certainly distinct, and probably new.

III. Russia to the North of Poland.—This district only contains seventy species as far as I know, and the only peculiar species is *Argynnis Eugenia*, which occurs in the Ural Mountains and in Eastern Siberia.

IV. Poland and South Russia.—This district is richer in butterflies than almost any other part of Europe, as it boasts of no less than 205 species, of which 27 are peculiar to it.

V. Turkey and Dalmatia.—It is probable that this is also one of the richest countries of Europe, but I only know of 46 species which certainly occur there, including 9 peculiar species.

VI. Greece.—I can only enumerate 18 species as occurring in Greece, though I think it likely that ten times that number may be found there. Of these, 4 are peculiar species.

VII. Italy.—One hundred and fourteen species occur in Italy. *Pamphila Ætna* is the only species which, as far as I know, does not occur in any other part of Europe.

VIII. Corsica and Sardinia.—These islands contain 30 species. Three of these are peculiar species, and several of the others are sub-species, which are not yet sufficiently developed to be raised to the rank of species, although some of their larvæ differ from those of the parent species.

IX. Spain and Portugal.—The Peninsula, which has been well worked by Rambur, appears to be surprisingly poor in butterflies, as I am not aware of more than 115 species which occur there, including 5 peculiar species. No less than 20 of our very limited number of British butterflies are wholly wanting, at least in the south of Spain. These appear to be all Central European species. They are *A. Cardamines*, *M. Athalia*, *A. Selene*, *A. Euphrosyne*, *A. Paphia*, *V. Io*, *V. Antiopa*, *A. Iris*, *M. Galathea*, *H. Hyperanthus*, *C. Davus*, *E. Epiphron*, *E. Medea*, *N. Lucina*, *T. Betulæ*, *T. W.-album*, *T. Pruni*, *C. Hippothoe*, *P. Arion*, and *C. Paniscus*.

X. France.—This country is very rich in *Rhopalocera*, containing in round numbers about 200 species. The only species which I have not recorded as occurring in other parts of Europe are *Polyommatus Lefebvrei*, and *P. Hopfferi*. However, as *P. Hopfferi* occurs in Asia Minor, and Staudinger does not consider it European, I think it very probable that Ménétries was in error when he stated that the insect occurred in France.

XI. Britain. The most authentic British species do not number 70, every one of which occurs in France, and the only peculiar form* is the sub-species *Polyommatus Artaxerxes*.

* *Chrysophanus Hippothoe*, var. *Dispar*, is, I believe, occasionally found on the Continent, and is also common in Egypt and Nubia; but I can give no authority for these statements.

XII. North Central. — This division includes Denmark, Germany, Holland, and Belgium.—One hundred and fourteen species occur in this district, of which two, *Melitæa Britomartis* and *Erebia Reichlini*, do not to my knowledge occur elsewhere.

XIII. Austria and Switzerland.—This district is one of the richest in Europe. One hundred and ninety-five species occur within its boundaries, three of which are peculiar to it. These are *Melitæa Asteria*, *Erebia Arete*, and *Pyrgus Cacaliæ*.

In addition to the species referred to in the above summaries, Staudinger enumerates as European *Pyrameis*? *Ionia*, *Chionobas Crambis* and *Erebia Eriphyle*. For these I can find no recorded European localities, but *P.*? *Ionia* occurs in Asia Minor, and probably also in Greece, Turkey, or South Russia. It is chiefly remarkable as being an insect whose position is doubtful; Herrich-Schäffer calls it *Apatura Ammonia;* and though Staudinger includes the whole of the *Vanessides* in his genus *Vanessa*, he doubts whether *Ionia*, which he places at the end, after *Cardui*, really belongs to it. *C. Crambis* probably occurs in Lapland, as it is one of the polar species, and I believe that *E. Eriphyle* occurs in the mountains of some part of Germany.

It will not be necessary to recapitulate the geographical distribution of such *Rhopalocera* as are confined to Europe, as I could only reproduce in words what I have fully explained elsewhere by tables. The remainder of the present paper will therefore chiefly consist of remarks on the distribution of genera, and the extra-European range of European species, though I shall not omit to notice such species peculiarly European as call for unusual attention.

Genus Papilio.

When we consider that the greater part of Europe lies to the north of the warm temperate zone, we need not be surprised that the great tropical genus *Papilio* is only represented by four species, though it can hardly contain less than 300 described species. *P. Machaon* ranges from Sweden on the north to Egypt on the south, and from England on the west to Kamtschatka on the east; and, like so many of the East Asian species, also occurs in California. *P. Podalirius* occurs over the greater portion of Europe, and likewise occurs in North Africa and Western Asia, which would appear to be the limits of its range. *P. Hospiton*, a species closely allied to *Machaon*, but perfectly distinct, is confined to Corsica and Sardinia.

Genus Thais.

This small genus is confined to South Europe, with the exception of *T. Cerisyi*, which most commonly occurs in Asia Minor.

Genus Doritis.

D. Apollina, the only species, appears to be confined to the south-east of Europe and to Asia Minor.

Genus Parnassius.

The metropolis of this mountain genus appears to be Siberia. *P. Apollo* ranges from Spain to Central Asia. *P. Delius* extends throughout Northern Asia to California, where the Siberian species, *P. Nomion* and *P. Clarius*, also occur.

Genus Aporia.

A. Cratægi ranges eastwards to Amoorland.

Genus Pieris.

Pieris is, like *Papilio*, a great tropical genus, and consequently but sparingly represented in Europe. *P. Brassicæ*, *Rapæ* and *Napi* are met with throughout Europe, Asia and North Africa; and the range of *P. Daplidice* is hardly less extensive. *P. Callidice*, a mountain insect, ranges from the Pyrenees to Kamtschatka.

Genus Anthocharis.

A. Belia occurs in France and California. It is rather singular that Ménétries does not notice it as occurring in any part of Asia. *A. Tagis* ranges from France to Kamtschatka. This species, like many others, presents a Corsican sub-species. *A. Cardamines* occurs from Ireland to Amoorland.

Genus Zegris.

Z. Eupheme, the commonest species, ranges from Spain to the Kirghis Steppes.

Genus Leucophasia.

This genus demands special notice, as it is a moot point whether the five described species are really good species, or merely varieties. Premising that the typical *L. Sinapis* occurs commonly from England to Amoorland, I shall give as concisely as possible the cha-

racters of these disputed forms, without venturing to pronounce any opinion of my own.

L. Sinapis (L.) White, with an ash-coloured apical blotch reaching quite to the tip of the fore-wing: hind-wings beneath with extensive dusky green markings.

L. Diniensis (Bd.) Differs from *Sinapis* in the apical blotch not extending to the tip of the fore-wing: the hind-wings are almost immaculate beneath. Occurs in England and France.

L. Erysimi (Bkh.) This form, which is now allowed on all hands to be a variety, is entirely without the apical blotch. Same localities.

L. Lathyri (Hüb.) Differs from all the rest in the base of the wings being yellowish. Underside of the hind-wings greenish, with two white spots. Occurs in France and Germany.

L. Amurensis (Mén.) Differs from the other forms in the shape of the wings, which are less rounded, and in other minor particulars. This form replaces *Sinapis* in the more southern parts of Amoorland, and I believe is also met with in Europe.

Genus Colias.

A genus of moderate size, the species of which have generally a very wide range, and are most frequent in the north temperate zone. *C. Palæno* and *Phicomone* occur in the mountains of South Europe: but their polar sub-species are common to Lapland, Siberia and Labrador. *C. Edusa* ranges from England throughout Asia, and occurs in North America. *C. Chrysotheme* occurs in Eastern Europe and North America, but Boisduval doubts whether the American specimens are not distinct. Ménétries also gives Irkutsk as a locality for this insect. *C. Hyale* is a more widely dispersed species than any we have yet noticed. It is met with from North Russia to the Cape of Good Hope, and from England to Siberia and California.

Genus Gonepteryx.

G. Rhamni ranges eastwards to Amoorland and California.

Genus Danais.

The only European species of this Indian group is *Danais Chrysippus*, which occurs all over Africa, India and South China. In Europe it only occurs in Greece and Turkey.

Genus Melitæa.

This genus appears not to occur in South Africa; and if any

of our European species have yet penetrated to America, they have become so modified as to be reputed distinct, since America contains some peculiar species. Most of the European species occur in Western Asia, but *M. Maturna*, *Phœbe*, *Trivia*, *Didyma*, *Parthenie*, *Dictynna* and *Athalia*, extend eastwards to Amoorland and Kamtschatka.

Genus Argynnis.

This genus, like the last, is wanting in South Africa. Almost all the European species also occur in Asia, many extending eastwards to Amoorland. The following polar species extend to North America: *A. Freyja*, *Aphirape* var. *Ossianus*, *Polaris* and *Chariclea*. *A. Aglaia* also extends to North America through Siberia. This species is very closely related to two forms in Europe, *A. Cyrene* and *A. Alexandra*, which show signs of having had a common origin with it. *A. Cyrene* replaces, as far as I know, the common species in Corsica, but Mr. Dale informs me that he has an *Aglaia* much resembling *Cyrene*, which was taken near Manchester. Possibly *Aglaia* may have been exposed to somewhat similar insular variation in Britain as in Corsica. All the large species of *Argynnis* are very liable to vary. The other allied form is *A. Alexandra*, which occurs in the Caucasus. Herrich-Schäffer considers it only a variety. The underside of the hind-wings resembles *Aglaia*, but the silvery marginal spots are replaced by greenish lunules.

Genus Araschnia.

This genus only contains one species, for I doubt whether *A. Burejana*, of Bremer, is distinct from *Prorsa*, which ranges from France to Amoorland. *Prorsa*, the summer variety, has the appearance of a *Limenitis;* and *Levana*, the spring variety, that of a *Vanessa*.

Genus Grapta.

G. C.-album extends eastwards to North America: I am not aware that *G. Egea* occurs to the east of Armenia. *G. Progne*, a North American species, has recently been met with in Amoorland.

Genus Vanessa.

The only species which reaches America is *Antiopa*. It is still doubful whether the European *V.-album* is identical with the

American *J.-album*, but as the former occurs in Siberia, it is unlikely that the slight difference in the imago would be already correlated with sufficient differences in the larva to entitle them to rank as distinct species. All the European species extend eastwards to Amoorland. *Urticæ* has a Corsican sub-species, *Ichnusa*, attached to it; but slight as the difference between them is, it is correlated in the larva, although an intermediate variety occurs in Italy and Turkey. It would be interesting to know whether the larva of the intermediate variety agrees with either *Urticæ* or *Ichnusa*.

Genus Pyrameis.

Small as this genus is, it is one of the most interesting, and the very paucity of species is doubtless owing in great measure to the gigantic power of *Cardui*. *Atalanta* is the first species we have to consider. It occurs all over Europe, Asia Minor, North Africa and North America. But I cannot find it recorded as occurring in Asia, east of Asia Minor*, though I have consulted several Russian and other authors on purpose. But it is an extraordinary thing that *Callirhoe*, a closely allied species, replaces *Atalanta* in China, India and the Canaries. *Cardui*, like *Atalanta* and *Callirhoe*, appears to be a very old species, though its migratory habits might account in part for its wide extension. It occurs in every part of the world, except South America†, in abundance. After this species Staudinger places *Ionia*, a species occurring in Eastern Europe (?) and Asia Minor, which is so abnormal that some call it a *Vanessa* and some an *Apatura*. Not having seen it, I place it temporarily in the genus *Pyrameis*. Owing to the great power of the typical species of this genus, it is very rare to find more than two species occurring in company in any part of the world, and those two generally belong to distinct groups.

Genus Neptis.

This genus is mostly found in India, where many closely allied species belonging to it occur. The two European species, *N. Aceris* and *Lucilla*, which do not occur to the west of Austria and Italy, appear to exist in most parts of Asia.

Genus Nymphalis.

N. Populi ranges from France to Amoorland.

* According to Cramer, *P. Atalanta* occurs in China; but the old authors are not to be depended on with respect to localities.

† *P. Cardui* is often said to occur in Brazil; but Mr. Bates informs me that the Brazilian insect is a variety of the American *C. Huntera*.

Genus Apatura.

Both *Iris* and *Ilia* occur in Amoorland, though they appear to be generally rare in Asia.

Genus Charaxes.

The insects comprised in this beautiful genus are mostly peculiar to tropical Africa, but *Charaxes* is represented in the south-west of Europe by *C. Jasius*. I do not know whether it occurs out of Europe.

Genus Melanagria.

With the exception of *M. Halimede*, which occurs in Amoorland, I believe this genus is confined to Europe and Asia Minor.

Genus Lasiommata.

Except *L. Dejanira*, which Mr. Hewitson regards as more properly belonging to the genus *Debis*, and which has been taken in Amoorland, no European *Lasiommata* appears to occur east of the Kirghis steppes. A sub-species of *L. Megæra* (*Tigelius*) occurs in Corsica.

Genus Hipparchia.

H. Phædra and *H. Hyperanthus*, which both occur in Amoorland, are the only species, as far as I know, which reach to Eastern Asia. A sub-species of *H. Semele* (*Aristæus*) occurs in Corsica.

Genus Triphysa.

T. Phryne occurs in South Russia and parts of Siberia.

Genus Cœnonympha.

C. Hero, *Davus* and *Œdipus* extend to Amoorland, and *Davus* occurs in California. *C. Corinna* is confined to Corsica.

Genus Chionobas.

This genus is almost wholly confined to the Arctic Regions. Most of the European species naturally occur in Siberia and Labrador.

Genus Erebia.

Many of the European species extend to Asia, but very few have a very extended range. *E. Parmenio* and *Embla* occur in Amoorland.

Genera Libythea and Nemeobius.

Our single European representatives of the *Libytheidæ* and *Erycinidæ* appear to be confined to Europe.

Genus Thecla.

Rubi, *Spini* and *W.-album* occur as far east as Amoorland and North China.

Genus Chrysophanus.

Phlæas, *Virgaureæ*, *Hippothoe* and *Chryseis* occur in Amoorland. *Phlæas* extends to North America, where several closely allied species also occur.

Genus Polyommatus.

The following species are recorded as occurring in Eastern Asia: *Tiresias*, *Fischeri*, *Battus*, *Pylaon*, *Argus*, *Arion*, *Cyllarus*, *Semiargus*, *Optilete*, *Zephyrus*. *Bæticus*, and I believe *Telicanus* also, occurs in the East Indies, and *Telicanus* and *Lysimon* occur in South Africa. Hopffer asserts that *Hoffmannseggii* of Zeller is only a much worn *Telicanus*, but Staudinger states that *Hoffmannseggii* is an American species. *P. Ægon* and *P. Agestis* vary remarkably in Corsica, as M. Bellier de la Chavignerie states in the last number of the Annales de la Soc. Ent. de France.

Genus Pyrgus.

P. Serratulæ occurs in Amoorland.

Genus Nisoniades.

N. Tages occurs in North China.

Genus Pamphila.

P. Sylvanus and *Comma* range to America through North Asia.

Genus Cyclopides.

The three European species extend eastwards as far as Amoorland.

I am sorry I cannot give the distribution of the species north and south with more accuracy, owing to my having no catalogues of the butterflies of North Africa and Southern Asia. But we obtain from such species as I have noticed some important results respecting Corsica and America. Insects have travelled between Asia-Europe and America by two routes, one in the direction of Iceland and Greenland, and one through the Aleutian islands. The species that are common to Asia-Europe and America have almost invariably taken the latter route, thus proving that Europe and North America have been geographically separated for such a length of time as to allow for all the species that once travelled between them to vary to such an extent as to be reputed distinct in the two countries, for only *Pyrameis Atalanta* and a few other powerful species of that kind have remained unchanged out of the numbers that must have travelled that route. If geologists can tell us how long Corsica has been separated from the main land, we shall have some most valuable data by which to calculate the length of time that the formation of a species requires, for a large number of Corsican insects are already good species, and many more have become sub-species, which is the last step towards the formation of a new species, especially when the variation is correlated in the larva, as it is in *Vanessa Ichnusa*. In conclusion, I do not think any one present, however much he may differ from the opinions expressed in this paper, will regret my bringing prominently forward Mr. Darwin's theory of the Origin of Species, for it is the great scientific question of the day, and ought to be freely discussed here as well as in other societies; and my own opinion is, that, in a great measure, by the study of geographical distribution in its widest sense, the theory must stand or fall.

XL. *On* Anisocentropus, *a new Genus of Exotic* Trichoptera, *with Descriptions of Five Species, and of a new Species of* Dipseudopsis. By R. M'Lachlan, Esq., F.L.S.

[Read 2nd February, 1863.]

In the course of a general examination that I made some short time since of the North American *Trichoptera* in the British Museum Collection, I found that the insects described by Mr. Walker under under the names of *Notidobia pyraloides*, *N. latifascia* and *Goëra elegans* have no connection with the genera in which they have been placed, nor do they even belong to the *Sericostomidæ*, as is proved by the maxillary palpi of the two sexes being similar in form, the insects of that family being readily distinguished by the great difference that exists in the form of the maxillary palpi in the sexes. It was evident also that the types under the two last names really belonged to the same species, the palpi of *N. latifascia* having been broken off. But what struck me most forcibly was the aberrant numerical arrangement of the tibial spurs, there being one spur less on the posterior than on the intermediate tibiæ, a peculiarity quite singular as far as the *Trichoptera* are concerned.

Dr. Hagen, in his "Synopsis of the North American Neuroptera," places the two last insects in the genus *Leptocerus*, quoting Mr. Walker's descriptions, as he was not well acquainted with the types, and retains the first in the genus *Notidobia*. When in London however, in 1861, he discovered that the species were wrongly placed; but he informs me that he had not noticed the aberrant arrangement of the spurs.

There have lately been received from New Guinea and other islands in the Oriental Archipelago, three other species presenting the same peculiarities and otherwise generically identical, the whole forming a well-marked genus, which I propose to call *Anisocentropus*. One species, *A. illustris*, is perhaps the most beautiful insect in the order, yet described.

Family LEPTOCERIDÆ.

Anisocentropus, n. g.

Head convex above, ocelli absent; antennæ about twice the

length of the wings, thread-like, basal joint short, bulbous, a tuft of hairs is placed on the underside between the basal joint and the eye; maxillary palpi very long, hairy, not differing in the sexes; 1st and 2nd joints short, of equal length, 3rd longer than the 1st and 2nd united, 4th half the length of the 3rd, terminal joint about as long as the 3rd, flexible; labial palpi small, the joints of about equal length.

Prothorax small, much narrower than the head; mesothorax oval-elongate, broader than the head and flattened above; abdomen not robust.

Legs: femora thin, sub-compressed; tibiæ cylindrical, the posterior tibiæ and tarsi always more or less hairy. Spurs 2. 4. 3; anterior tibiæ with two small spurs at the apex; intermediate tibiæ with two spurs at the apex and two in the middle, the outer spurs in each pair long; posterior tibiæ with one long spur in the middle and two unequal ones at the apex.

Wings rather thickly clothed with short adpressed pubescence: anterior wings short and broad, dilated at the apex, which is obliquely rounded; discoidal cell closed; anastomosis complete, but very irregular; the two apical cells formed by the furcations of the two branches of the *ramus discoidalis*, very long; posterior wings much smaller than the anterior, folded.

In the two American species the hairy covering on the wings is thicker than in the others.

Anisocentropus illustris, n. sp. (Pl. XIX. fig. 1.)

Fuscus, nitidus, sparse ochraceo-pilosus: antennis nigro-fuscis, supra albo-maculatis, infra brunneis, articulo basali ochraceo; capite nitido nigro-fusco; penicillo ochraceo; palpis maxillaribus ochraceis, articulo ultimo fusco; mesothorace nitido fusco, maculâ mediâ nigro-fuscâ ochraceo-marginatâ; abdomine supra fusco, infra vix ochraceo; pedibus anticis omnino ochraceis, tibiis tarsisque intermediis et posticis fuscis, his valde hirsutis; alis anticis nitidis, purpurascenteo-fuscis, bases versus vix ochraceis, strigis maculisque ante medium cyaneis; fasciâ mediâ cuneiformi albido-ochraceâ angulum analem non attingente; posticis fuscis.

Long. corp. 4½ lin.; long. antenn. 10 lin.; exp. alar. 13 lin.

Antennæ blackish-fuscous, the joints above spotted with white, not distinctly annulated, beneath wholly brownish, basal joint ochreous; head above shining blackish-fuscous, with scattered ochreous hairs, the pencil-like tufts ochreous; maxillary palpi ochreous, terminal joint fuscous; prothorax ochreous, hairy;

mesothorax shining fuscous, with a black space in the centre, margined with a ring of short ochreous hairs; abdomen above fuscous, beneath somewhat ochraceous; anterior legs wholly ochreous, the knees and tarsi slightly fuscescent; intermediate legs, femora ochreous, tibiæ and tarsi fuscous; posterior legs, femora slightly fuscescent, tibiæ and tarsi fuscous, very hairy; anterior wings shining purplish-fuscous, varied at the base with reddish-ochreous, before the middle are some brilliant blue streaks and spots; from the middle of the costa arises an oblique whitish ochreous fascia, broadest at its origin and not reaching the anal angle, extreme apical margin yellowish, ciliæ fuscous; posterior wings wholly fuscous.

Anal appendages.—Male: App. sup. small, rounded, fringed with long hairs, ventral lamina emarginate, penis flat. Female: Dorsal lamina triangular, obtuse at the apex; app. sup. roundly spoon-shaped.

Habitat, Salwatty, near New Guinea (Mr. Allen).

In my own collection and in that of the British Museum.

Anisocentropus dilucidus, n. sp. (Pl. XIX. fig. 2.)

Ochraceus: antennis albidis, articulo basali ochraceo; palpis, thorace, abdomine, pedibusque pallide ochraceis; alis anticis fuscis, ante medium et apicem versus purpureo-suffusis, fasciâ pone medium, angulum analem non attingente, maculâque parvâ ad arculum albidis; posticis dilute fuscis.

Long. corp. $3\frac{1}{2}$ lin.; long. antenn. $9\frac{1}{2}$ lin.; exp. alar. $9\frac{1}{2}$ lin.

Antennæ whitish, unannulated, basal joint ochreous; head, palpi, thorax, abdomen, and legs pale ochreous; anterior wings fuscous, with a purplish reflection, most evident before the middle and towards the apex; a broad whitish band arises from the costa beyond the middle but does not reach the anal angle, at the arculus is a small whitish spot; posterior wings pale fuscous.

Habitat, New Guinea, Island of Mysol (Mr. Allen).

Two specimens in the collection of the British Museum.

Smaller in every way than the preceding and easily distinguishable therefrom. In both species the anterior wings are destitute of hairy covering on those parts of the membrane that are occupied by blue or purple markings.

Anisocentropus immunis, n. sp. (Pl. XIX. fig. 4.)

Dilute ochraceus: antennis pallidis, griseo-brunneo-annulatis; capite, thorace, pedibusque pallide ochraceis; alis anticis dense ochraceo-pubescentibus; posticis hyalinis.

Long. corp. —— ?; long. antenn. $10\frac{1}{2}$ lin.; exp. alar. 10 lin.

Antennæ with obscure greyish-brown annulations; head, thorax and legs pale ochreous; anterior wings densely clothed with short ochreous pubescence, costal margin darker; posterior wings hyaline.

Habitat New Guinea (Mr. Allen).

One specimen in the collection of the British Museum.

Anisocentropus latifascia, Walker. (Pl. XIX. fig. 5.)

Notidobia latifascia, Walker, Catalogue of Neuropterous Insects in the British Museum, pt. 1, p. 90, 3.

Goëra elegans, Walker, idem, p. 95, 5.

Leptocerus latifascia, Hagen, Neuroptera of North America, p. 279, 12.

L. elegans, Hag. idem, p. 279, 10.

Testaceus: antennis fuscis dimidio basali flavo-annulato; capite thoraceque testaceis; abdomine vix fuscescente; pedibus testaceis, tibiis tarsisque posticis obscurioribus, hirsutis; alis anticis flavo-ochraceis, pone medium fasciâ latâ brunneâ; posticis griseo-brunneis.

Long. corp. 3 lin.; long. antenn. 9 lin.; exp. alar. 9 lin.

Antennæ fuscous, annulated with yellow in the basal half; head, palpi and thorax testaceous; abdomen somewhat fuscescent; legs testaceous, the posterior tibiæ and tarsi darker and clothed with long hairs; anterior wings yellowish-ochreous, with a broad brownish band beyond the middle, only the inner margin of which is well defined; posterior wings brownish-grey.

Habitat, North America.

In the collection of the British Museum, formerly in that of the Entomological Club.

There is not the slightest doubt as to the types of Mr. Walker's species being identical. See introductory remarks.

Anisocentropus pyraloides, Walker. (Pl. XIX. fig. 3.)

Notidobia pyraloides, Walker, Catalogue of Neuropterous Insects in the British Museum, pt. 1, p. 90, 2; Hagen, Neuroptera of North America, p. 271, 2.

Ferrugineus: antennis ochraceis, bases versus brunneo-annulatis; capite, thorace, abdomineque ferrugineis; pedibus ochraceis; alis anticis et posticis saturate brunneis.

Long. corp. 3½ lin. ♂, 4 lin. ♀; long. antenn. — ?; exp. alar. 9 lin. ♂, 11 lin. ♀.

Antennæ ochreous, annulated with brownish towards the base; head, thorax and abdomen ferruginous; legs ochreous, posterior tibiæ and tarsi with a few long hairs; anterior and posterior wings uniformly dark brown.

Anal appendages.—Male: App. sup. long, finger-shaped, with long hairs at the apex; app. inf. long, obtusely pointed, curved upwards; penis thickened at the apex.

Habitat, Georgia (Mr. Abbott).

Two specimens in the collection of the British Museum.

Family RHYACOPHILIDÆ.

Genus Dipseudopsis, Walker.

This genus was characterized by Mr. Walker in pt. 1 of the British Museum Catalogue of Neuropterous Insects, p. 91 (1852), from a single specimen from Port Natal (*D. Capensis*), and considered as belonging to the *Sericostomidæ*. Since then a second species (described below) has been received from China; and as the maxillary palpi are five-jointed in both sexes, and present no structural difference, I think it should more properly be referred to the *Rhyacophilidæ*. It is a very distinct genus, with 3. 4. 4 spurs and a remarkable development of the prothorax (especially in the Chinese species), more so than I have observed in any other genus of *Phryganidæ;* this part forms above a very evident collar, deeply divided in the middle.

Dipseudopsis collaris, n. sp. (Pl. XIX. fig. 6.)

Fusca: antennis flavis, brunneo-annulatis; capite fusco, marginibus lateralibus et postice flavidis; prothorace flavo; mesothorace piceo-fusco; abdomine fusco; pedibus flavo-ochraceis; femoribus, tibiis, tarsisque intus concavis; alis anticis stramineis (vel stramineo-fuscis) maculâ albido-hyalinâ, venis concoloribus; posticis sub-hyalinis, venis flavis.

Long. corp. 6 lin.; exp. alar. 15 lin.

Antennæ yellow, annulated with brown; head fuscous, the lateral and hinder margins yellowish; palpi ochreous, slightly fuscous; prothorax large, conspicuously yellow (sometimes slightly fuscous); mesothorax pitchy fuscous; metathorax testaceous; abdomen fuscous; legs yellowish-ocherous, deeply concave on the inner side; anterior wings straw yellow (sometimes pale fuscous), a whitish spot on the disk, veins concolorous; posterior wings sub-hyaline, veins yellowish. The whole insect is remarkably devoid of hairy covering of any kind.

Habitat, Hong Kong (J. C. Bowring, Esq.) and North China.

In the collection of the British Museum.

XLI. *Descriptions of Brazilian Honey Bees belonging to the Genera* Melipona *and* Trigona, *which were exhibited, together with Samples of their Honey and Wax, in the Brazilian Court of the International Exhibition of* 1862. By F. Smith, Esq., Pres. Ent. Soc.

[Read 2nd March, 1863.]

Not a single species of honey bee belonging to the restricted genus *Apis* is indigenous to South America; *Apis mellifica*, and probably other species of the same genus, were long ago imported into the West Indian Islands, and I believe also into the northern provinces of South America; here they collect honey abundantly, both in a state of domestication and also at large in woods and forests.

The substitutes for the hive bee in Brazil are the genera *Melipona* and *Trigona*, which are there extremely abundant; about thirty species belonging to the genus *Melipona* are described, and not less than fifty of the genus *Trigona;* these insects are the stingless honey bees of South America.

Although the genera *Melipona* and *Trigona* possess several characteristics in common, and these are such as form the basis of many genera, still the insects included in the genus *Melipona* are essentially distinct and different from those that here form the genus *Trigona*.

After a careful examination of a great number of species belonging to both genera, I have, I trust, been able to lay down characters that will render their discrimination a matter of little or no difficulty, having found those hitherto employed lead to inextricable confusion and perplexity. That it is very desirable to separate these bees into two or more genera will, I think, be admitted by every Entomologist, when it is stated that at present not less than 120 species are known.

St. Fargeau has given to one of his divisions of the genus *Trigona* the generic title of *Tetragona*, but the only characteristic difference is the elongated, almost quadrangular, form of the abdomen of the worker bee; this character, if allowed to be of generic value, would frequently throw the sexes into different

genera; the genus *Tetragona* therefore cannot be retained. M. Guérin Meneville observes, in the "Iconographie du Règne Animal," that several authors do not separate *Melipona* and *Trigona;* this is true, but I am inclined to believe this has arisen from the fact of their not having been acquainted with a sufficient number of species. To me it appears that nature herself has separated them; for although both genera are found abundantly in the New World, yet not a single species of the genus *Melipona* has, I believe, yet occurred in the Old World; whereas a great many species of *Trigona* have been discovered there; they are by no means uncommon in India, Africa, Australia, or the Islands of the eastern Archipelago, &c. This circumstance appears to me to offer a strong argument in favour of their separation.

The general appearance of the bees that compose the two genera is at once obviously different; those belonging to the genus *Melipona* have a close resemblance, in many instances, to those of the genus *Osmia*, to which the species of the genus *Trigona* have not the least resemblance.

The only distinctive generic character, proposed by Latreille for the separation of these genera, is their having either dentate or edentate mandibles; the examination of a large number of species proves that this character cannot be accepted as of generic value; I believe it only characterizes species of peculiar habits of economy. Of the fourteen species of *Trigona* described in the present paper, four only have toothed mandibles; yet the general habit of the species at once denotes that they all undoubtedly belong to the same genus. I have inspected the oral organs of a considerable number of species, and all agree in having the same number of joints in the labial palpi; but those which I have examined with toothed mandibles, have the palpi as long as, or even longer than, the tongue, the palpi being set with a few longish hairs; but I have not found any having edentate mandibles with pubescent palpi; I am here alluding to species of *Trigona*.

The form of the palpi differs considerably in the various species that I have examined; in some, the two elongate basal joints of the labial palpi are narrow, and only slightly widened at their base; others are more widened at the base, and have also a broad thin semi-transparent flattened margin. The tongue also varies greatly in its relative proportion to the labial palpi, being longer or shorter in different species. The same differences also obtain in the genus *Melipona*, but in a greater degree; the tongue being sometimes nearly twice as long as the labial palpi, and pubescent at the apex; in others it is about equal in length to the palpi;

but every intermediate degree is to be found, so that it is impossible to draw a line of demarcation between the species.

All these bees are honey gatherers, but the honey collected by the different species varies greatly in quality; from the nests of some it is excellent, from others worthless. The honey of the species "*Mombuca*" is said to be black and sour, whilst that of "*Tataira*" is excellent; the quality being dependent on the species of flowers from which the honey is collected. This great difference in the honey of the various species is apparently confirmatory of the fact that each species confines itself to particular flowers, never visiting any other kinds. The different relative length of the tongue in the species is also confirmatory of the same supposition; indeed, the great diversity in this respect observable in these bees, appears to me to be analogous to a similar diversity in the length of the bills of humming birds, which, it is well known, are always adapted for reaching the nectaries of the particular flowers which they usually frequent. Those species of *Melipona* and *Trigona* that have the tongue short in all probability frequent flowers having open corollas, whilst others, as *Melipona anthidioides*, furnished with an elongated tongue, extract their food from elongated tubular flowers. Should this supposition prove to be correct, it will still further confirm an opinion I have long entertained, that characters, which in certain groups of *Hymenoptera*, serve admirably the purpose of generic subdivision, will fail to do so when applied to others. The wing system, so admirably adapted generally for the subdivision of the fossorial tribe, fails to answer that purpose when applied to the *Scoliidæ;* the typical genus *Scolia* presents four, if not five, distinct types of neuration in the anterior wings; the difficulty could undoubtedly be at once overcome by giving to each division a different generic name; but all the species are so linked together by other characters, as well as by habit, all in fact so obviously belong to one genus, that Burmeister and myself at the same time, each ignorant of the other being engaged upon the same family, included them all in the genus *Scolia*, forming sections for the reception of the species differing in the neuration of their anterior wings.

The history of *Melipona* and *Trigona* is still in a great degree enveloped in obscurity; no one, that I am aware of, has hitherto obtained all the sexes even of a single species of either of these genera. M. Guérin found six or seven females in a nest of *Melipona fulvipes* and a great number of workers. For the purpose of examination, when describing the species in the present

Paper, I was supplied with ten examples of each; three species consisted entirely of males, one species partly of males and workers, and the remainder entirely of workers.

Of the genus *Trigona* I have never seen a female, neither has any one described that sex, but I have little doubt it will be found, as in the genus *Melipona*, that each community contains a number of females. According to the observation of naturalists, the nests of *Trigona* contain an immense host of individuals; Mr. Stretch, who collected at Panama, found a nest several feet in length, in the hollow of a tree, containing thousands of individuals, their numbers being, as he informed me, apparently countless.

Judging from the information we possess of the economy of these genera, it would appear that it is analogous to that of the social *Formicidæ*, whose communities always contain numerous females at the same time.

The females of the genus *Melipona* resemble the queen of the hive, in having much shorter wings than the workers, and also in having the abdomen elongate.

The nests of these bees are not only found in very different situations, but are also constructed of very different materials; this I should have concluded must be the case, from the very different construction of the mandibles in the various species; some have the inner edge of the mandibles finely denticulate, others, on the contrary, with only four or five strong teeth, whilst in some species we find them perfectly smooth, or edentate.

Gardner, in his travels, gives a list of such species as he met with in the provinces of Piauhy and Goyaz, where he found them numerous; in every house, he says, you find the honey of these bees: many species, he tells us, build in the hollow trunks of trees, others in banks; some suspend their nests from the branches of trees, whilst one species constructs its nest of clay, it being of a large size; the honey of this species, he says, is very good.

Mr. H. W. Bates often observed these bees collecting clay, which they plaster on their broad flat posterior tibiæ; for some time he was at a loss to ascertain the use made of it, but he subsequently observed that it was the material with which they wall up any large opening in decaying trees, leaving only an outlet necessary for their entrance into and exit from the hive. Gardner informs us, that some species close these entrances with wax, this being the habit of a species named *Tubý;* another, that he calls *Atakira*, closes it with clay; he also speaks of another, named

"*Urussu*," as large as a humble bee, having a black head and yellow body; this is probably a species of *Euglossa;* its honey, he says, is good. A species called "*Urussu preto*" is black, and more than an inch long; this also may probably be a species of *Euglossa*.

Sir John Hearsey informed me that he had observed the small stingless honey bees, *Trigona*, commonly in India, particularly so at Darjeeling, and that they affix their combs to the branches of shrubs and trees, without any kind of exterior covering. The wild honey bees, belonging to the genus *Apis*, also suspend them in the same manner; one species, (apparently, from description, the *Apis dorsata*), he secured in a box prepared for that purpose; after feeding them in confinement a few days, they readily domesticated themselves, and accumulated a large store of honey.

The *Vespidæ*, enumerated in the present paper, were sent from Brazil with the honey bees, but neither honey or wax, as having been produced by them; it is probable, however, that all were considered honey gatherers; the *Nectarina analis* has long been known to collect honey, and likewise the *Nectarina Lecheguana;* that which is collected by the latter species is by St. Hilaire said to be of a poisonous quality; the injurious effects it produced upon himself and his companions, he has described, as being attended with considerable danger. The nest of this wasp he found attached to a small bush, about a foot from the ground, of an oval shape, and about the size of a man's head, being covered with a chartaceous envelope, like that of European wasps.

There are more than a dozen species known of the genus *Nectarina*, but the honey collected by the different species is not all poisonous.

St. Hilaire mentions two sorts of *Lecheguana* as being well known to the natives, one giving a white, the other a red honey; the white is innocuous, the red always poisonous.

In the nest room at the British Museum there are several wasps' nests that have contained honey; but in all, it is apparent that the cells are not constructed of a material adapted for containing it, and consequently such nests are materially damaged by the honey penetrating and dropping from one layer of comb to another.

A nest was presented to the Museum last year, about two feet in length, and fifteen inches in diameter at the broadest part; the nest was that of *Polybia scutellaris;* for the purpose of investigation, the nest was divided longitudinally; it contained upwards of a hundred specimens of a living *Mantispa* (*Trichoscelis varia*),

probably a parasite, but not a single living wasp; this nest was found to contain honey in some of the cells in the centre of the upper combs; and, as in the case of those above mentioned, the honey was penetrating from layer to layer; but in no part of the nest was there any brood; the number of combs was fourteen, the diameter of the largest being at least fourteen inches; what the number of cells might be, would require a considerable amount of calculation to ascertain,—of course many, many thousands; and yet this nest did not appear to have been recently in use for the purpose of rearing brood; was it then a deserted nest? and did the wasps really store up the honey it contained? Wasps are well known to plunder the hives of honey bees, and is it not possible that this apparently deserted nest was used merely as a magazine, for the plunder of some nest of a *Melipona* or *Trigona*.

If it is a fact that some species of wasp store honey, it appears only reasonable to expect that the combs would be constructed of a material adapted for containing it; and if storing honey formed a part of the economy of the species, I should conclude it would also form the support of the young brood, as well as of the community at large; but, as stated above, I have never found young brood in any wasp's nest that contained honey, but I have never failed to do so in combs of the honey-collecting bees. It has been suggested, as possible, that species of *Trigona* may sometimes take possession of deserted wasp-nests; this I do not think probable, the nests are not adapted to their purposes; the cells are much too large for their brood, at least in all the nests I have examined, and honey is always stored in waxen cells by the bees.

When a wasps' nest is discovered, in which the combs are constructed of a material adapted for containing honey, and in which young brood is also found, showing this habit to form a part of the usual economy of the species, then we shall have some legitimate grounds for believing in the existence of certain species of wasps being, in the true signification of the term, honey collectors. At present, it appears to me, that we only know as a fact, that certain wasp-nests occasionally contain honey, supposed to have been stored by the wasps themselves; they, in the first place, not having constructed their cells of a material adapted for containing it. The nests of *Nectarina analis*, and also of *N. Lecheguana* and of *N. mellifica*, are all constructed of papyraceous materials, but of a somewhat firmer texture than those of *Polybia*. All the species of *Nectarina* are said to be honey collectors; if such be the case, may it not be possible that it is

stored up at a period of the season when the rearing of brood is suspended, and when they are prevented from collecting food abroad, the honey forming their support during such a season; or is it simply to be regarded as booty obtained by the plunder of nests of honey-collecting bees, and that deserted wasps' nests are merely used as temporary receptacles.

For the new species described in this Paper, I have, when possible, used the vernacular for the specific name of the species; I also add a list of vernacular names whereby many of these honey bees are distinguished; the manner of spelling many no doubt renders it extremely difficult, if not impossible, to translate them. Of several described here, I obtained the signification of the vernacular from Mr. Bates, whose long residence in Brazil has rendered many names familiar to him.

Limão—Lemon (honey acid or bitter?)
Cupira (Curupíra, wood-demon).
Jaty.
Mandaçaia.
Canúdo (pipe-shaped).
Mondury (a bee).
Arapuá.
Tubiba (sharp, acute).
Vamos embôra (let us be off).
Tataira (tatá, fire; ira, honey).
Mumbuca (spiny).
Urussú.
Mosquito (little fly).
Sanharó.
Moça branca (white girl).
Cutia o de purga (Aguti, or purge bee).
Manvel d'Abreu (a man's name).
Capuchú.
Cabocló (Indian).
Enxu.
Enxuy.
Boca torta (crooked mouth).
Amarello (yellow).
Chapeo (a hat).
Munbuhinha.
Mandaguira.
Cabeça de latão (brass-headed).
Caga fogo (spit fire).
Cabiguara.
Abelha de Cupim (White-ant Bee).
Preguizo grosso (big sluggard).
Preguizo fino (slender sluggard).
Uruçu de chão (ground Uruçu).
Uruçu de páo (timber Uruçu).
Uruçu boi (bull Uruçu).
Uruçu pequeno (small Uruçu).
Jatai grande (large Jatai).
Jatai pequeno (small Jatai).
Marmelada preta (black Marmelada).
Marmelada branca (white Marmelada).
Mondury preto (black Bee).
——— vermelho (red Bee).
——— legitimo (legitimate Bee).
——— mirim (small Bee).
——— papaterra.
Burá manso (tame Burá).
—— bravo (stinging Burá).
Sete portas (seven doors).
Chupé.
Irati (wax).

The following list will give the vernacular names of all the species described in this Paper, and will show the nature of the products of each, as exhibited in the Great Exhibition:—

Scientific Name.	Vernacular.	H., honey; W, wax.
Melipona Mandaçaia	Mandaçaia	H. W.
——— Mondury	Mondury	H. W.
Trigona Limão	Limão	H. W.
——— Cupira	Cupirà	H. W.
——— Jaty	Jaty	H. W.
——— bipunctata	Canúdo	H. W.
——— ruficrus	Arapuá	H. W.
——— Tubiba	Tubibá	W.
——— recursa	Vamos embora	H.
——— Tataira	Tataira	H. W.
——— Mombuca	Mombuca	H.
——— amalthea	Sauharó	H. W.
——— Mosquito	Mosquito	
——— dorsalis	Moça branca	H. W.
——— mellea	Cutia o de purga	H. W.
——— longipes	Manvel d'Abreu	H. W.
Polybia socialis	Capuchú	
——— sericea	Cabocló	
——— occidentalis	Boca torta	
——— fuscicornis	Amarello	
——— Enxuy	Enxuy	
Apoica pallida	Chapéo	
Nectarina analis	Enxu	

Melipona and *Trigona*, according to my views of those genera, may be readily separated. The *Meliponas* are larger insects, having *wings shorter than the abdomen*, the latter being very convex and oblong; their mandibles never being dentate.

The *Trigonas* have the wings more ample, and *longer than the abdomen;* the stigma is distinct, with its inferior margin rounded; the abdomen is short, somewhat triangular, compressed beneath, and forming a carina or sharp edge down the centre; the mandibles are serrated, denticulate, or sometimes edentate.

Genus Melipona.

Melipona, Illig., Klug, Latr., St. Farg.; *Trigona*, Jurine; *Apis*, Fab.

Tongue, variable in length, the same length as the labial palpi, sometimes considerably longer. The labial palpi 4-jointed, the first joint twice as long as the second, the two apical joints minute and placed at the side of the second joint at its apex.

The maxillary palpi one-jointed, but in many species not discernible; the mandibles not toothed.

Wings one-fifth shorter than the body; the neuration very like that of the genus *Trigona*, but the transverse nervures are frequently obliterated; the anterior wings with one marginal and two sub-marginal cells, the first quadrate, receiving the first recurrent nervure; the second extending to the apex of the wing. In some species there is a false nervure or fold, apparently forming an incomplete small second sub-marginal cell.

Posterior legs of the ordinary length, the tibiæ dilated.

1. *Melipona Mandaçaia.*

M. nigra; facie pube cinerea vestita; abdomine ferrugineo; marginibus basalibus segmentorum nigro-fasciatis; alis hyalinis.

Worker. Length 3¾ lines. Head and thorax black; the posterior margin of the vertex and the thorax above with black pubescence; the front, between the ocelli and the insertion of the antennæ, clothed with snow-white pubescence; the flagellum, beyond the two basal joints, fulvous; the clypeus and face below the antennæ smooth and shining; the tips of the mandibles rufo-piceous. The articulations of the anterior and intermediate legs rufo-piceous, as well as the apical joint of their tarsi; the posterior legs have the femora at their apex beneath, the inferior margin, and the apex of the tibiæ and the tarsi rufo-piceous; the pubescence on the legs black. Abdomen of a chestnut-red, with the basal segment, the basal margins of the four following and the apical segment, black. The wings hyaline, their nervures pale ferruginous. The mandibles without teeth.

The fasciæ on the abdomen vary in width as well as in depth of colouring; in some specimens they are scarcely visible, in consequence of the segments having contracted and drawn their bases inwards.

2. *Melipona Mondury.*

M. capite thoraceque nigris; pedibus, scutello, et abdomine flavo-ferrugineis; alis hyalinis.

Worker. Length 4 lines. Head and thorax black; the mandibles and antennæ ferruginous, the latter dusky above; the anterior margin of the clypeus and a line down the centre reddish-yellow; the cheeks and face covered with short cinereous pile, the vertex with fulvous hairs. The scutellum, metathorax behind,

the legs and abdomen of a reddish-yellow, the scutellum palest; the thorax clothed with fulvous pubescence; the apex of the tibiæ and the basal joint of the tarsi more or less fuscous; the legs have a short fulvous pubescence. The apical segments of the abdomen have a thin cinereous pubescent pile; the basal margin of the segments more or less ferruginous.

This insect closely resembles that described by St. Fargeau under the name *M. rufiventris*, but that species has the inner orbits of the eyes pale and the scutellum black.

Genus Trigona, Jurine.

Tongue lanceolate, usually the same length as the labial palpi, rarely longer; the labial palpi 4-jointed, the first joint twice as long as the second, the two apical ones minute.

The maxillary palpi not discernible.

The mandibles sometimes dentate, more frequently not toothed.

Antennæ of the male 13-jointed, of the worker 12-jointed.

Wings *longer than the body;* the superior wings with one elongate marginal cell, and two sub-marginal ones; the second extending to the apex of the wing; in some species a small second sub-marginal cell is faintly traced; the sub-marginal cells rarely complete, usually one or more not traced, sometimes all are obliterated. (Pl. XX. figs. 9, 10.)

Posterior legs elongated, the tibiæ flattened and dilated.

1. *Trigona Limão.*

T. nigra, lævis et nitida; mandibulis, pedibus, abdominisque basi rufo-testaceis; alis hyalinis.

Male. Length $2\frac{1}{4}$ lines. Head and thorax black, smooth and shining; the anterior margin of the clypeus, the labrum, mandibles, and the scape of the antennæ, in front, rufo-testaceous; the flagellum obscurely ferruginous beneath; the tegulæ and legs rufo-testaceous; the wings hyaline, with the nervures testaceous; the posterior margin of the scutellum bordered with a narrow line of fine cinereous pubescent pile, a patch of the same on each side of the metathorax; the head rather wider than the thorax, the front convex. The abdomen more or less rufo-piceous at the base, the first segment, sometimes two and the base of the third. Mandibles not toothed.

Very readily distinguished by its broad, shining, convex head, and from its being destitute of pubescence.

2. Trigona Cupira.

T. nigra, lævis et nitida; clypeo punctis duobus; mandibulis tarsisque apicalibus ferrugineis; alis sub-hyalinis.

Worker. Length 2½ lines. Black, smooth and shining; the clypeus with two oblong spots; a spot between the antennæ, the extreme base of the scape and the mandibles ferruginous, inclining to orange in some individuals; an obscure pale line at the inner orbit of the eyes, observable in particular positions; the scape, excepting the two basal joints, fusco-ferruginous, palest beneath. The three apical joints of the tarsi ferruginous; the wings hyaline, with a slight fulvous tint, the nervures ferruginous, in some individuals darkest towards the base. Abdomen black, with the basal margins of the apical segments sometimes more or less rufo-piceous. In some examples the femora, or both femora and tibiæ, are obscurely rufo-piceous. The mandibles not toothed.

3. Trigona Jaty.

T. capite thoraceque nigris; pedibus abdomineque ferrugineis, tibiis posticis apice nigris; alis hyalinis.

Male. Length 2½ lines. The head and thorax black; the antennæ ferruginous, the flagellum slightly fuscous above; the face covered with white downy pile; the clypeus and mandibles yellow, or reddish-yellow, the latter black at their extreme base. The tegulæ and legs ferruginous, the posterior tibiæ at their apex and the basal joint of the tarsi black; the lateral margins of the mesothorax narrowly, and the scutellum pale rufo-testaceous, the latter fringed with pale pubescence; the wings hyaline and iridescent; the thorax on the sides and beneath clothed with cinereous pubescence. Abdomen ferruginous, narrow and elongate, nearly linear, slightly widened at the base; in some examples darkest towards the apex.

4. Trigona bipunctata. (Canúdo).

T. nigra; facie plagis duabus flavis, clypeo mandibulisque ferrugineis; alis hyalinis; abdomine apice obscure ferrugineo.

Worker. Length 2¾ lines. Black; the flagellum fulvous beneath; the clypeus, labrum and mandibles ferruginous, the latter black at their base; a yellow spot on each side of the face at the lateral margins of the clypeus; a yellow line on the inner margin of each cheek beneath; a fine cinereous, downy pubescence covers the face above the clypeus, and also the thorax on the sides and beneath. The wings hyaline, with their nervures pale ferruginous.

Abdomen varies greatly in colour, obscurely ferruginous, with only the basal segment and middle of the basal margin of the second segment black, with the two or sometimes the three basal segments nearly black; in others the abdomen obscurely ferruginous, as well as the metathorax. The scutellum in this variety is usually pale ferruginous. Mandibles not toothed.

The variety last mentioned is probably immature, but all are from one nest.

5. *Trigona recursa.* (Vamos embôra.)

T. nigra; facie pube cinerea vestita; abdomine obscure rufo-variegato; alis hyalinis.

Worker. Length 3 lines. Black; the face and cheeks covered with a fine downy cinereous pile; the extreme base of the scape rufo-piceous, the flagellum obscurely fulvous beneath; the tips of the mandibles rufo-piceous. The wings hyaline, the nervures pale ferruginous, the costal nervure dark brown; the apical joint of the tarsi ferruginous; the posterior tibiæ obscurely ferruginous within. Abdomen elongate, tapering towards the apex; in some examples the segments are more or less variegated with obscure ferruginous tints. The mandibles with three or four stout acute teeth at their apex.

6. *Trigona Tataira.*

T. flavescenti-rufa; thorace nigro; scutello pallidè ferrugineo; alis hyalinis.

Male. Length $2\frac{1}{2}$ lines. Of a reddish-yellow; the head usually much redder than the abdomen, and rather wider than the thorax; the scape, and the flagellum beneath, rufo-ferruginous; the eyes red. Thorax black, sometimes with an obscure testaceous broad stripe running down the centre of the mesothorax, and uniting with the pale colouring of the scutellum; the tegulæ pale testaceous; the wings hyaline, their nervures rufo-testaceous; the intermediate and posterior tibiæ and tarsi usually more or less fusco-ferruginous. Abdomen reddish-yellow. The mandibles not toothed.

In some examples the metathorax is rufo-testaceous.

7. *Trigona Tubiba.*

T. nigra, opaca; capite antice et metathorace postice pube cinerea vestitis; alis sub-hyalinis, apice fuscis.

Worker. Length $2\frac{3}{4}$ lines. Opaque-black; the flagellum fulvous

beneath; the cheeks, face, thorax beneath, and the sides of the metathorax, with a fine silky cinereous pile; the apical joints of the tarsi rufo-piceous; the wings sub-hyaline, their apex clouded, darkest along the anterior apical margin. Individuals not matured have the scutellum, metathorax and abdomen more or less obscurely testaceous; mature examples are quite black.

8. *Trigona ruficrus*, Latr. (Arapuá.)

T. nigra, nitida; pedibus posticis, tibiis tarsisque diluto-brunneis.

Worker. Length 3 lines. Black and shining; the face and cheeks covered with cinereous pile; the clypeus naked and shining; the scape in front and the mandibles ferruginous; the latter black at their base and apex; the flagellum fulvous, with the basal joint black. Thorax thinly covered above with erect black pubescence; the wings dark fuscous, with their extremities palest; the first sub-marginal cell obliquely crossed by a narrow transparent line. Abdomen depressed and very shining, some examples being faintly tinged with reddish-brown. The posterior tibiæ and tarsi pale ferruginous; the apical joints of all the tarsi ferruginous. The mandibles strongly dentate at their apex.

9. *Trigona Mombuca.*

T. nigra, nitida; capite antice pube cinerea tecto; scutello pedibusque obscure rufo-piceis; alis sub-hyalinis.

Worker. Length $2\frac{1}{2}$ lines. Black and shining; the face and cheeks covered with cinereous pubescence; the scape ferruginous in front, the basal joint black; the tips of the mandibles ferruginous. Thorax: beneath and on the sides with a thin, short, cinereous pubescence; the disc with scattered, erect, black pubescence; the scutellum fringed behind with ferruginous hairs; the legs sometimes obscurely rufo-piceous, or only so beneath in other examples; the wings hyaline, the nervures pale rufo-testaceous. Abdomen: the apical segments with their posterior margins fringed with cinereous pubescence. The mandibles not toothed.

Male. The same size as the worker; usually with the scutellum paler, sometimes pale testaceous; the legs frequently rufo-testaceous; the posterior tibiæ convex exteriorly. The abdomen usually more or less rufo-piceous, particularly towards the base.

10. *Trigona Mosquito.*

T. flavescenti-rufa; capite thoraceque nigris; alis hyalinis.

Worker. Length 2 lines. Pale reddish-yellow, the head and thorax black, or, in some examples, of a brownish red; the scape in front, the clypeus, the face on each side of it, and the mandibles, pale reddish-yellow. The scutellum, tegulæ and legs pale; the scutellum sometimes whitish; the wings hyaline and iridescent, the nervures brown; the posterior tibiæ have usually a dark stain in the middle. Abdomen entirely pale. The mandibles not toothed.

11. *Trigona amalthea.* (Sanharó.)

T. nigra; facie pube cinerea vestita; alis fusco-nigris.

Worker. Length $2\frac{1}{2}$ lines. Black and shining; the face and cheeks with a fine cinereous pile; the flagellum obscurely rufo-piceous beneath; the tips of the mandibles rufo-piceous. The thorax and legs with black pubescence; the apical joint of the tarsi rufo-piceous; wings dark fuscous, slightly paler towards their apical margins. The mandibles strongly toothed.

12. *Trigona dorsalis.* (Moça branca.)

T. pallidè ferruginea; capite thoraceque supra nigris; clypeo antennisque pallidè ferrugineis; abdomine oblongo; alis hyalinis.

Worker. Length $3\frac{1}{4}$ lines. Pale ferruginous, with the head and thorax black above; clypeus, mandibles and antennæ pale ferruginous; also a narrow pale line at the inner orbits of the eyes; the face has a thin griseous pubescence, that on the thorax and legs is fulvous; the antennæ more or less fuscous above. The posterior tibiæ fringed with a mixture of pale and black hairs; abdomen elongate, tapering towards the apex. Mandibles not toothed.

13. *Trigona mellea.* (Cutia o de purga.)

T. melleo-flava; alis hyalinis iridescentibus.

Worker. Length 3 lines. Entirely of a honey-yellow colour; the sides of the face covered thinly with fine griseous pile; the mandibles of a paler yellow. The sides of the thorax with a fine griseous pile; the apical joints of the tarsi reddish-yellow; the wings hyaline and iridescent, the nervures pale yellow; abdomen elongate. Mandibles toothed.

14. *Trigona longipes.* (Manvel d'Abreu.)

T. capite thoraceque nigris; abdomine pedibusque pallidè ferrugineis, tibiis posticis apicibus nigris.

Worker. Length 2 lines. Head and thorax black; the inner orbits of the eyes, the clypeus and a minute spot above it, the labrum and mandibles, yellow; the base of the mandibles and the anterior margin of the clypeus fuscous; the antennæ pale beneath and fuscous above. Thorax: the collar, a narrow line over the tegulæ, the scutellum and legs, of a reddish-yellow; the posterior legs elongate, the tibiæ very slender at the base, and broadly expanded at their apex, battledore-shaped; the expanded part black, as well as the basal joint of the tarsi; the wings sub-hyaline, clouded towards their apex. Abdomen of a testaceous yellow, more or less fuscous at the apex. Mandibles not toothed.

Fam. VESPIDÆ.

Genus Polybia, Saussure.

1. *Polybia socialis*, Sauss. Mon. Guêpes Soc. p. 177, tab. 24, fig. 1 (Capuchú).

2. *Polybia sericea*, Sauss. Mon. Guêpes Soc. p. 179, tab. 24, fig. 4.
Vespa sericea, Oliv. Encycl. Méth. p. 675 (Cabocló).

3. *Polybia occidentalis*, Sauss. Mon. Guêpes Soc. p. 194.
Vespa occidentalis, Oliv. Encycl. Méth. vi. p. 675 (Boca torta).

4. *Polybia fuscicornis*, St. Farg. Hym. Hist. Nat. Ins. i. p. 536 (Amarello).

5. *Polybia Enxuy.*

P. nigra, flavo-variegata; petiolo brevissimo; prothoracis margine posteriore, scutelli marginibus, abdominisque segmentorum marginibus, flavis.

Worker. Length 3 lines. Black: the clypeus, inner orbits of the eyes, two spots between the antennæ, a line curved backwards on the vertex, slightly interrupted in the middle, extending to the summit of the eyes, and a broad stripe behind the eyes, yellow; the clypeus has a transverse black spot, which is notched at its inferior margin. The posterior margin of the prothorax, an irregular line on its side before the wings, and the margins of the scutellum yellow; the metathorax with two longitudinal yellow lines, the tegulæ yellow; the wings hyaline and iridescent, the nervures

black. Abdomen: the margins of the segments 1—5 bordered with yellow, the sixth entirely yellow.

Genus Apoica, St. Farg.

1. *Apoica pallida*, St. Farg. Hym. Hist. Nat. Ins. i. p. 538 (Chapéo).

Genus Nectarina, Shuck.

1. *Nectarina analis*, Shuck. Cab. Cycl. Hist. Ins. p. 183 (1840). (Enxu).

DESCRIPTION OF PLATE XX.

Fig. 1. *Melipona fulvipes*, female; 1 *a*, posterior tarsus of ♀; 1 *b*, posterior tarsus of ☿.
Fig. 2. *Melipona anthidioides*, worker.
Fig. 3. *Melipona Mondury*, worker.
Fig. 4. *Trigona mellea*, worker.
Fig. 5. *Trigona longipes*, worker.
Fig. 6. *Trigona Mombuca*, worker; 6 *a*, antenna of ♂; 6 *b*, antenna of ☿; 6 *c*, anterior leg of ♂; 6 *d*, anterior leg of ☿; 6 *e*, posterior leg of ♂; 6 *f*, posterior leg of ☿.
Fig. 7. *Trigona Tataira*, male.
Fig. 8. Anterior wing of *Melipona*.
Fig. 9. Anterior wing of *Trigona*, with the transverse cubital nervures obsolete.
Fig. 10. „ „ with transverse cubital nervures incomplete.
Fig. 11. Tongue of *Trigona mellea*, worker.
Fig. 12. Tongue of *Melipona rufiventris*, worker; described by St. Fargeau.
Fig. 13. Tongue of *Trigona amalthea*, worker.
Fig. 14. Tongue of *Melipona anthidioides*, worker,
Fig. 15. Tongue of *Trigona recursa*, worker.

XLII. *Descriptions of Two new Australian* Lucanidæ. By J. O. Westwood, Esq., M.A., F.L.S., Hope Prof. of Zoology, &c.

[Read 2nd March, 1863.]

Although I have so recently offered to the Entomological Society descriptions and figures of several species of *Lucanidæ* from the Antipodes, I am again able to add to my former papers two other interesting insects belonging to the same family from Australia, of one of which we are unfortunately only acquainted with a single female specimen in the Collection of the British Museum, whilst of the other our knowledge is confined to a most elaborate drawing of a male insect kindly forwarded to this country by Dr. Howitt, and as kindly placed in my hands by Major Parry, with a view to my drawing up a detailed description of it for our Society.

In consequence of our ignorance of the male of the former of these two insects, it is not easy to refer it with precision to the subgeneric group to which it belongs, especially as the female presents a combination of characters not met with in the females of any of those divisions hitherto proposed. I am therefore compelled to describe it as a species of the great group *Dorcus*, waiting until the arrival of its male shall clear up its true position.

Dorcus Howittanus. (Pl. XXI. fig. 1.)

Niger, subnitidus, tenuissimè punctatus ; capite latissimo, versus angulos posticos fortius punctato, elytrorum latitudine, angulis posticis pone oculos rotundatis ; mandibulis falcatis, edentatis, capitis longitudine ; pronoto transverso, antice vix capite latiori, postice paullo angustiori ; elytris ad basin parte postica pronoti vix latioribus ; tibiis 2 anticis simplicibus ; 4 posticis in medio spinâ armatis.

Long. corp. cum mand. lin. 16 ; mand. lin. $2\frac{3}{4}$; cap. lin. $2\frac{3}{4}$; pronot. lin. 3 ; elytrorum lin. $7\frac{1}{3}$.

Lat. capitis lin. $6\frac{3}{4}$; parte postica pronoti lin. 6.

Habitat Gipps Land, ad partem austral.-orient. Novæ Hollandiæ.

In Mus. D. Howitt.

The remarkable width of the head of this insect renders it at once distinct from all the other species of the genus. It is black and slightly glossy, short and broad in its form, the prothorax and head being of nearly equal width, the hind part of the head being as wide as the front part of the prothorax. The general surface of the body is delicately punctured, but the hind part of the head, several spaces on the pronotum, and the slight sulcations of the elytra, are more strongly punctured. The head has the posterior angles behind the eyes prominent, but rounded off; in front of the eyes the sides of the head are gradually narrowed, the anterior angles being obliquely truncated; the disc of the head, near the fore margin, having two elevated tubercles near the base of the mandibles, which are porrected, as long as the head, sickle-shaped, and not furnished with any teeth on the inside; the front of the head is acutely angulated and deflexed. The prothorax is quite transverse and widest near the anterior margin, the fore angles being slightly rounded off, the hinder portion of the lateral margin being nearly straight, and the posterior angles acute and slightly narrower than the base of the elytra. The disc of the pronotum has several slight impressions. The elytra near the basal angles are acute, the base being scarcely narrower than the central part; they are marginated at the sides, and each has the disc impressed with several slight sulci; they are very convex on the disc, and rounded behind. The anterior tibiæ have the apical external angle produced to a sharp slightly curved spine; they are destitute of teeth on the outer margin, (a very slight tooth appears to be indicated in the drawing on the left fore tibia, which is absent in the right one,) and the four posterior tibiæ have a small acute tooth near the middle of the outer margin.

This species might at first sight be (and indeed has been) considered as the male of the insect which I described in these Transactions (2nd Series, vol. iii. p. 220) from a single female specimen in the British Museum Collection, taken at Moreton Bay, under the name of *Dorcus Pelorides;* but on carefully comparing Dr. Howitt's drawing with the type of that species, I feel satisfied that the two insects are specifically distinct. I therefore take the opportunity of adding a figure and details of *Dorcus Pelorides* (Pl. XXI. fig. 2), in order that the differences between the two insects may be at once perceived. These differences appear to me to be such as would not be exhibited by the opposite sexes of one and the same species. This is especially the case with the shape of the head, the rather deep semicircular emargination of its front margin, the outline of the prothorax, rather broader at its posterior angles than

the base of the elytra, and the ovate form of the latter, which are considerably wider across the middle; the dilatation of the dentate fore tibiæ is of course a sexual character.

Dorcus carbonarius. (Pl. XXI. fig. 3.)

Latus, niger, nitidus; capitis parte antica rugose-punctata; pronoti lateribus punctatis, elytrisque minutissime punctatissimis; clypeo antice angusto, parum producto, truncato, angulis posticis capitis paullo obtuse productis; pronoti marginibus lateralibus rotundatis, angulis posticis vix emarginatis; elytris vix costatis, tibiis 2 anticis latis, 5-dentatis, 4 posticis in medio spinâ unâ spinulâque adjectâ armatis.

Long. corp. cum mandibulis lin. 17; lat. pronoti lin. $6\frac{2}{3}$; lat. elytr. in medio lin. $7\frac{1}{4}$.

Habitat Nova Hollandia, ad litt. sept.-occid.

In the British Museum. Collected by —— Burn, Esq., Surg., R. N. Presented by Haslar Hospital.

The broad glossy form of this species distinguishes it from all the other insects to which it is most allied, giving it a certain amount of resemblance to *Lucanus glabratus* of De Haan, but the general structure of the insect will not allow of its approximation to that insect in the arrangement of the family. The head is rather small, with the anterior angles entirely rounded off in an oblique direction; the hinder angles behind the eye are slightly angulated; the front margin of the head is emarginated, and in the middle is a small advanced clypeus, truncated in front; the mandibles (female) are small, strong, and with a large tooth in the middle of the inner margin; the mentum is semicircular; the maxillæ rather small, with the inner lobe acute at the tip; the palpi are small, the first and third joints being the shortest; the labium is bifid and setose, and the labial palpi have the three joints of nearly equal length, the last being rather curved. The eyes are partially divided by the lateral septum of the skull. The antennæ rather short, with the 6th and 7th joints small, each producing a seta; the three terminal joints small, the last rounded at the apex; the prothorax is large, much wider than the head; the lateral margins regularly rounded and marginated, smooth, with the sides punctured; the posterior angles slightly produced; the fore margin strongly sinuated. On each side, within the lateral margins, is an oval impression of considerable size. The elytra are large and broad, being wider in the middle than the prothorax; they are delicately and closely punctured,

with a short impressed line near the scutellum, two others on the disc parallel with the suture, the outer one not extending so far as the inner, and two other sulci on the disc beyond the middle. The legs are strong; the fore tibiæ broad and multidentate, the tooth preceding the apex being the strongest, the middle and hind tibiæ have a strong spine in the middle of the outer margin, preceded by a minute one.

The general structure of this female insect removes it generically from all the other groups with the females of which we are acquainted. The rounded prothorax and spinose tibiæ separate it from the true *Lucani*. In *Odontolabis* (*Alces*, &c.) the hind tibiæ are simple. In *L. Raffesii*, *Nepalensis* and *Chevrolatii*, the form of the prothorax and broad fore tibiæ of this new insect are not found. It is, however, much closer to some of the larger species of *Dorcus*, especially in the toothing of the legs and in the produced clypeus, but its broader form and rounded thorax removes it from all of these.

DESCRIPTION OF PLATE XXI.

Fig. 1. *Dorcus Howittanus*, ♂.

Fig. 2. *Dorcus Pelorides*, ♀, magnified.—2*a*, the head from above; 2*b*, maxilla; 2*c*, terminal joints of antenna; 2*d*, fore tibia; 2*e*, middle tibia; 2*f*, hind tibia.

Fig. 3. *Dorcus carbonarius*, ♀, natural size.—3*a*, the head from above; 3*b*, maxilla; 3*c*, mentum; 3*d*, labium and palpi; 3*e*, antenna.

XLIII. *Descriptions of Two new Species of Diurnal* Lepidoptera. By W. C. Hewitson, F.L.S.

[Read 6th April, 1863.]

Papilio Birchallii.

Alis nigris, serie submarginali macularum ochracearum; anticis maculis quatuor analibus; posticis fascia transversa viridi-ochracea, posticis subtus macula costali maculaque anali flavis, maculis quatuor intermediis minutis lunulisque submarginalibus sanguineis.

Upperside dark brown. Anterior wing with a bifid spot at the middle of the costal margin, a submarginal band of conical spots, and above them, near the anal angle, four ill-defined spots, all ochre-yellow. Posterior wing dentated, with a central, irregular, deeply-sinuated, transverse band of grey-green, divided into eight by the nervures (one part within the cell), and a submarginal band of spots of the same colour.

Underside rufous-brown. Anterior wing with a twice curved macular band of seven greenish-yellow spots, commencing at the middle of the costal margin by the small spot described above, and ending on the inner margin near the anal angle; the second spot (within the cell) lunular; the third small, triangular; the fourth hastate; the fifth and sixth conical; the seventh small; a submarginal band of five pale yellow spots between the anal angle and the middle of the wing. Posterior wing with a round bifid spot at the middle of the costal margin, two lunular spots (one small) at the anal angle, and between them, in a direct line, four minute scarlet spots; also a submarginal band of seven spots of the same colour.

Exp. $4\frac{7}{10}$ inch. Hab. New Granada.

In the collection of Mr. Edwin Birchall, of Birkenhead, sent to him with a large collection of beautiful species (many of them new) from Bogota by a brother, to whom, for his zeal in the pursuit we have so much at heart, I have dedicated this species.

From Mr. Edwin Birchall I have received, though a stranger to him, the same generous kindness which is characteristic of all the Lepidopterists with whom it has been my lot to associate.

This species has a double aspect; it seems to connect the two

groups which are represented on the one hand by *P. Victorinus* of Doubleday, and on the orther by *P. Coristheus* of Boisduval. It is very nearly allied to *P. Corœbus*, a species lately described by Dr. Felder, from Venezuela.

Morpho Alexandra.

Alis nitidissimis, argenteo-purpureoque cæruleis, marginibus fuscis; subtus anticis ocellis quatuor, posticis ocellis sex (tertio minuto cœco).

Upperside. Male.—Brilliant silvery-blue; purple near the outer margins, which are brown and narrow, with lunules between the nervures; the ocelli of the underside slightly seen.

Underside rufous- or lilac-white clouded with rufous-brown, the nervures and three sub-marginal lines brown. Anterior wing with the cell rufous-brown, crossed midway by a band of white, the disco-cellular nervures marked by a band of brown; crossed beyond the middle by four black ocelli, the pupils white, large, the iris rufous, margined with black; followed by three transverse bands; the first, near the ocelli, zig-zag, rufous-brown; the second darker brown; the third, and the space between it and the outer margins, rufous-brown. Posterior wing with the base and a band within the cell rufous-brown, the end of the cell darker brown; the wing crossed at the middle by a broad unequal band of silvery-white, deeply sinuated on both sides and broadly margined with rufous-brown, and marked with six ocelli, smaller than those of the anterior wing, five of them black, with pupils of white and rufous—iris bordered with black; the first ocellus (near the costal margin), the fourth, fifth and sixth of nearly equal size; the second smaller, indistinct; the third minute, blind; the first sub-marginal transverse band formed of circular arches, the other two, near the margin and each other, together with the dentations of the margin, dark brown.

Exp. $6\frac{1}{2}$ inches.

This very splendid new *Morpho* is the property of Mr. G. G. Labrey, of Bowdon, near Manchester, who has generously given me free access to his extensive collection. In form and in size it is most nearly allied to *Morpho Anaxibia*, but with the colour of *Morpho Cytheris*, changing to pink, and near the outer margins to brilliant ultramarine-blue.

XLIV. *Descriptions of Three New Species of the Genus* Anthocharis, *Boisd., and a New Species of the Genus* Pais, *Hübn., from Tropical South-Western Africa.* By Roland Trimen, Esq.

[Read 6th April, 1863.]

Having had opportunities of examining the *Lepidoptera* contained in various heterogeneous Entomological Collections from time to time sent or brought from Damara Land and adjacent regions to Cape Town, I have been for some while engaged in preparing a list of the species, with such notes as I have been enabled to make. This I trust to forward to the Society on the return of Mr. Andersson, the well-known traveller, from his present journey in Damara Land; that gentleman, to whom I am already indebted for specimens and information, having promised to look specially after the *Lepidoptera* on this trip. I thus hope much to increase the value of my list by the accessions which will doubtless be made to it on an inspection of the species collected by Mr. Andersson in those little-explored regions which he has done so much to make known to the civilized world. Meanwhile, I think it desirable to publish descriptions of four of the most striking novelties from the country in question, belonging to the genera above indicated. Three of these are additions to the already large group of *Anthocharis*, a genus of which the species greatly need careful investigation and revision. But as no one of the three in question is marked with *red* or *orange* apical patches, Lepidopterists need not dread that the confusion of species will be made "worse confounded" by the publication of these descriptions. I have specimens of four or five species with red and orange apices, from Damara Land (which is especially rich is this genus), but at present despair of determining whether they belong to established species or not. I sincerely trust that, ere long, some able Lepidopterist will publish a careful monograph of this lovely genus of the *Pieridæ*, than which nothing could present a more attractive field for study and illustration.

Genus Anthocharis, Boisd.

1. *Anthocharis Regina.*

Exp. 2 in. 4 lin.—2 in. 9 lin.

Allied to *A. Ione*, Godt.

♂. Pure white, with very brilliant blue-shot violet-lake apical patch. *Fore-wing:* a linear, black, disco-cellular dot; costa white, or very faintly grey-dusted nearly to middle, where the blackish edging of the apical patch commences; apical patch composed of six elongate stripes (defined by the more or less strongly-marked dark nervules), and lying between the 2nd subcostal and 2nd median nervules, very narrowly and faintly edged with blackish internally, narrowly along costa to apex, more widely from apex along hind-margin as far as third median nervule (slightly indenting the violet on each nervule); median nervules usually blackish in their central portion, submedian nervure always so; base very slightly dusted with faint greyish. *Hind-wing:* usually spotless, occasionally with a hind-marginal row of small blackish spots, one at extremity of each nervule; 2nd subcostal and discoidal nervules often blackish near their origin; base very slightly grey-dusted, the irrorations often scarcely perceptible. Underside.—White, the hind-wing very faintly tinged with yellowish, apical patch pinkish-grey. *Fore-wing:* disco-cellular spot always present; occasionally a faint row of four or five fuscous spots about middle of apical patch. *Hind-wing:* costa more or less brightly edged with yellow from base to about middle; a minute disco-cellular dot, usually edged superiorly with yellow; rarely a very indistinct transverse row of five greyish spots from costa; extremities of nervules rarely marked with greyish.

♀. White, with no blackish nervules; apical patch of the same colour as in ♂, but with a less brilliant blue gloss (in one specimen this is scarcely inferior in brilliancy), and divided down its centre by a macular black band, which sometimes almost obliterates the inner portion of the violet,—the blackish edgings broader and darker. *Fore-wing:* disco-cellular dot well marked, ovate or round; near anal angle two blackish spots, continuous of the row dividing the violet. *Hind-wing:* blackish hind-marginal spots more usual than in ♂, but far from common. Bases of both wings a little more markedly and widely irrorated. Underside.—Apex of *fore-wing* and whole of *hind-wing* dull creamy-ochreous, occasionally with a reddish tint, and faintly patched minutely with grey; disco-cellular spots well defined, that of hind-wing

yellow, black-dotted; transverse rows of spots usually well marked, that of hind-wing elbowed at 1st median nervule, and continued thence to inner margin; no spots at extremities of nervules.

Var. ♂. Blackish edgings of apical patch and nervules more strongly marked, the former broader; bases more broadly and closely irrorated; hind-marginal spots in hind-wing well-marked. Underside.—Nervules rayed with black for a little distance from hind-margins; transverse row of spots blackish in fore-wing.

Var. ♀. Apical patch black, intersected by 6 outwardly-narrowed white spots; basal irrorations broad and dark. *Fore-wing:* disco-cellular spot large; upper spot near anal angle merged in apical black, which extends to anal angle. *Hind-wing:* hind-marginal spots very large, black, and suffused, forming a band interrupted by white in the folds between nervules. Underside.—Black markings very conspicuous; extremities of nervules as in var. ♂ just described, but more widely blackish.

This splendid *Anthocharis* differs from *A. Ione*, Godt.,—"die schönste aller Pieriden," as Hopffer enthusiastically terms it,*—in the considerably greater width of the violet in the apical marking, which is much more metallic in appearance, the most brilliant blue sheen, in hue like the wings of *Lycæna Argiolus*, Linn., ♂, glittering over a ground-colour which in some lights is a dull crimson-lake. The basal irrorations are also very much fainter and less in extent, especially in hind-wing, where there is no vestige of the clouding along submedian nervure always present in *Ione;* and the hind-margin of hind-wing is very generally spotless, the nervures in this wing being white throughout, except as above described. But *the violet apical marking in the* ♀ is the most incontestable sign of its specific distinctness, that portion in the ♀ *Ione* being either orange, or black spotted with white or yellowish. The under-surface of the ♂ differs markedly from that of the Natal variety of *Ione*, named *A. speciosa* by Wallengren, (Lep. Rhop. Caffr. p. 16), to which all the Natalian specimens I have seen must be referred, but more nearly resembles that of the typical *Ione* figured in Peters' "Reise nach Mossambique" (Taf. xxi. f. 2), excepting in the presence of the disco-cellular dot in hind-wing, which is not indicated in the figure or mentioned in the description. The under-surface of the female is more like that of *Ione*, but differs in the complete state of the transverse macular band in hind-wing, and the very distinct yellow disco-cellular

* Peters' "Reise nach Mossambique," p. 357. (Vol. Ins. und Myriap.)

spot in this wing. The species, as a rule, attains a larger size than *A. Ione*, no specimen of the latter that I have seen expanding more than 2½ inches.

I am enabled to speak with confidence concerning this species, no less than sixty-seven examples having been brought from the interior by Mr. John A. Bell on his return from a recent trip to Lake Ngami *viâ* Walwich Bay. Mr. Bell informs that the species was most abundant on the Botletle, one of the chief streams of the river system of the Great Lake. Specimens have been taken much nearer the coast by Mr. Hutchinson and (I believe) by Mr. Andersson. Only single specimens of each of the varieties above characterised were in Mr. Bell's collection.

2. Anthocharis Phœnon.

Exp. 1 in. 6 lin.

♂. Pure white, with very large, dull purplish-crimson, faintly violet-glossed apical patch. *Fore-wing:* apical patch covering nearly half the surface, its inner edging of black well-defined, reaching from about middle of costa to anal angle, outer edging very narrow, rather deeply radiating on the nervules, which divide the crimson into *eight* bars; intersecting apical patch, but much nearer its inner than its outer edge, a blackish streak from costa, inwardly angulated on 1st median nervule, and joining interior black edging on 2nd median nervule, forming with the latter (in one specimen) a suffused, ill-defined spot; base and costa narrowly irrorated with greyish; a blackish disco-cellular dot. *Hind-wing:* greyish basal irroration extending a little along sub-median and median nervures; a thin blackish line bounding hind-margin as far as 2nd sub-costal nervule; extremities of nervules clouded blackish, more faintly so towards anal angle, the 3rd median nervule and sub-median nervure being unmarked. Underside.—*Fore-wing:* costa tinged with lemon-yellow; space between costal and median nervures orange-yellow (paler towards base), abruptly ending in a line with insertion of 1st sub-costal and 3rd median nervules; disco-cellular dot more distinct; apical patch faintly yellowish, the nervules crossing it yellow-ochreous, its inner edging ochrey-reddish (suffused on median nervules), the intersecting streak brownish-fuscous; parallel to and near hind-margin a yellow-ochreous line. *Hind-wing:* creamy; costa edged with orange-yellow to beyond middle; nervules from middle and hind-marginal line yellow-ochreous; from costa, before and just beyond middle respectively, two transverse streaks extend to near anal angle, the inner grey and nearly straight, the outer irregular,

ochreous-brown; between costal and sub-costal nervures a yellowish tinge; disco-cellular fold bright yellow from base to closing nervule; fold between median and sub-median nervures orange-yellow to anal angle.

The only species of the genus to which *A. Phœnon* is allied appears, from Boisduval's description (Sp. Gen. p. 581), to be *A. Eulimene*, Klug-Ehrenb., the under-surface being of very similar character in both species. But the differences are striking enough. Instead of a rosy-glossed fulvous patch of six divisions, *A. Phœnon* has a very large purplish-lake marking of no less than *eight* divisions (rivalling *A. Danaë*, Fab., in this respect); and in the hind-wing we find in *Phœnon* no disco-cellular dot. Beneath, the colouring of the fore-wing appears very similar; but in the hind-wing, with the exception of the clouded nervures, there can be little resemblance, *Eulimene* showing "le même dessin qu'en dessus," while the striæ of *Phœnon* present an appearance unique, as far as I have seen, in this genus. Nor must the intersecting streak of the apical marking be forgotten, a peculiar character which no other ♂ of *Anthocharis* possesses.*

Two specimens of this highly interesting and very beautiful insect were brought from Damara Land by Mr. Andersson, on his last visit to Cape Town, in 1862. I am in hopes of beholding examples of the female in the next collection Mr. Andersson succeeds in bringing down in safety.

3. *Anthocharis Eosphorus.*

Exp. 1 in. 6 lin.—1 in. 10 lin.

White, with rather small, ochrey-yellow, apical patch. *Fore-wing:* no disco-cellular spot; the whole surface sprinkled with minute blackish atoms, most thickly near base; an ill-defined blackish internal edging, broadest near costa, to apical patch, which is not divided by clouded nervules as in most species, and is more or less faintly clouded with browninsh externally; median nervules and sub-median nervure rarely blackish. *Hind-wing:* dusted with dark atoms, chiefly from base along median and sub-median nervures; spotless. Underside. — White, spotless, not irrorated. *Fore-wing:* apical patch faintly discernible by an ochrey shade. *Hind-wing:* faintly tinted with pale-yellowish; costa edged with yellow for a little distance from base.

* The apical portion of the fore-wing is unusually prominent for an *Anthocharis*, and the anal-angular region of hind-wing slightly so, the whole outline resembling that of the group of *Pieris* to which *P. Nero*, Fab., belongs.

The specimens before me having been pressed in a book, it is difficult to ascertain their sex. Some specimens, larger than the others, and with the inner edging of apical marking more strongly marked, may be females. An individual in Mr. Andersson's Collection (to which I have not access at present), I find from my notes to be "dusted with grey beneath, over apical region of fore-wing and whole of hind-wing."

I know of no species of *Anthocharis* which *Eosphorus* can be said to resemble, the only species whose apical marking approaches its own in colour being *A. Eris*, Klug-Ehrenb., but the purple gloss, and dark borderings and crossing nervules of the latter's marking give it a totally different aspect. In other respects the species strikingly differ. The wings of *Eosphorus* are exceedingly delicate in texture, the fore-wings rather markedly elongate but without any elbowing of hind-margin.

Besides Mr. Andersson's specimen above mentioned, I have examined seventeen examples in Mr. J. A. Bell's Collection, all from Damara Land, but have heard nothing of the habits of the species.

Genus Pais (Hübn.), Walker, Cat. Lep. Het. B. M., pt. i. p. 62.

1. *Pais pulchra.*

Exp. 1 in. 7 lin—1 in. 10 lin.

Fore-wing: Pale creamy; costa edged blackish to beyond middle; from base, between median and sub-median nervures, a ferruginous-red, longitudinal streak, abruptly ending before middle; a transverse stripe of the same colour, bi-angulated, not far from hind-margin, quite across wing, almost immediately preceded by a black line parallel to it; three black transverse striæ near base, the first not passing median nervure, the other two parallel, sinuous, reaching inner margin; three conspicuous stigmata (like those of most *Noctuæ* in position and shape), composed of black rings, enclosing a steely-centred spot of the ground colour, the two first rounded, contiguous, connecting costal blackish and extremity of longitudinal red stripe—the outer reniform, elongate, touching costal blackish stripe at one extremity and second angle of transverse black line at the other; hind-margin edged with black, from which extend short, straight, well-defined black lines between nervules to transverse red stripe. *Hind-wing:* ochreous-orange; a large fuscous lunule at extremity of discoidal cell; hind-margin with a black edging, united to an inner, parallel, blackish stripe by blackish lines between nervules. Underside.—

Pale ochreous: hind-wing orange-flushed, except on hind-margin: stigmata and lunule wholly black, conspicuous. *Fore-wing:* no ferruginous-red streaks; the black lines from hind-marginal edging extending to transverse black line, which is more suffused and much less angulated than above. *Hind-wing:* no blackish lines from hind-marginal edge, which is narrower, to inner blackish stripe, which is broader and darker than above.

Palpi yellow beneath, black above, terminal joint wholly black; two creamy spots on front of head; antennæ *wanting;* markings of thorax defaced; abdomen orange-ochreous, striped with black above, paler on the sides, with a row of black spots, beneath whitish, with two rows of black spots.

Described from a single ♀ specimen, whose body has been much injured by pressure in a book. A much worn and tattered ♂ example appears to present no difference of marking.

This fine and richly-coloured addition to the genus *Pais*, hitherto represented only by a single South African species, was taken by Mr. J. A. Bell, in Damara Land. It differs so widely from *P. decora*, Linn., that it is scarcely necessary to point out the distinctions between the species; but it is most interesting to observe the same general pattern and almost the same colours in both. The creamy, steely-centred stigmata of the fore-wing, and the ochrey-orange ground colour of the hind-wing, both of which are ferruginous-red in *P. decora*, at once suffice to distinguish *P. pulchra* from its congener. The above two specimens were all that Mr. Bell's Collection contained, but I understood him to say that the insect was not uncommon in some parts of Damara Land.

XLV. *Notes on the Australian* Longicornia, *with Descriptions of sixty New Species.* By Francis P. Pascoe, Esq., F.L.S., V.-P. Ent. Soc., &c.

[Read 6th July, 1863.]

In an extensive collection of Australian *Longicornia* that I recently received from William Macleay, Esq., M.L.A., of Sydney, I found about thirty species quite new to me. Previously I had obtained from Mr. Stevens a number of undescribed species that had formed portion of a collection made by Mr. Damel in various parts of Australia. These, with a few others from various sources, are the materials from which the following descriptions are made.

The whole of the species here described are, with very few exceptions, quite distinct from any hitherto known to me; and these exceptions refer almost entirely to the genera *Symphyletes* and *Hesthesis*. In both of these there are some forms that at the first glance *do* seem as if they were only varieties, but, on examination, afford strong grounds for specific distinction, and it is in reference to these that I think it will be desirable to examine a large series of specimens before we can be *quite* sure that the characters on which they are based as species are permanent. I am very confident that entomologists do not take into sufficient consideration the variation that often occurs in species. There is an innate tendency in many species to vary infinitely, while others, under all circumstances, are almost immutable. Many of our domestic animals may be cited as examples of both cases. In the British Museum may be seen a series of an Australian Longicorn—*Brachytria gulosa*—almost any two of which, taken without the others, would certainly be considered distinct by the ordinary observer. *Zygrita diva* is another Australian Longicorn, of which probably two individuals will rarely be found alike. As a general rule, however, the great mass of species appears to vary but little; but in the *Longicornia* an exception must be made as to size, and the length of the antennæ.

In Mr. Damel's collection there was a *Leptura*, nearly allied to

L. sex-maculata. As the genus is quite unknown in Australia, and the specimen was pinned through the *left* elytron, it was probably there by accident.

Genus Hebecerus.

1. *Hebecerus niphonoides.*

H. piceus, pube grisea fuscaque varius; prothorace tumido, linea mediana, nigra, punctata; elytris basi fasciculis duobus nigris; antennis fuscis, griseo-annulatis.

Port Denison.

Pitchy, covered with a rather coarse greyish pile, varied principally with brown; head concave between the antennæ, without an impressed line; antennæ ciliated beneath, dark brown, the lower part of the third and following joints greyish; prothorax very convex, a black punctured line in the middle, and a large dark patch on each side; scutellum rounded behind, a black lozenge-shaped spot in its middle; elytra coarsely punctured, irregular at the base, each with two short costæ, terminated in a small fascicle of black hairs, costæ and corresponding lines along the elytra yellowish-grey, with indistinct brown spots, especially at the sides, posteriorly on the declivity towards the apex another fascicle; body beneath and legs covered with an ashy-grey pile, speckled with brown, two brown rings on the tibiæ.

Length 5 lines.

A very distinct species readily to be distinguished by almost any one of the characters given above. It may be remarked here, that some of the species of this genus vary considerably. This is especially the case with *Hebecerus marginicollis*, Boisd., which is sometimes of a pale reddish-brown, instead of dark-brown or black, its normal colour; then the antennæ vary in length, thickness, amount of ciliation, and are either annulated with ashy or uniformly brown; the broad stripe on each side of the prothorax is narrowed, confined to the posterior part, or absent altogether. I suspect *Hebecerus lineola*, Newm., is one of its forms.

2. *Hebecerus sordidus.*

H. fuscus, fulvescente pubescens; prothorace linea mediana nigra, nitida; elytris fortiter punctatis, basi costis duabus brevibus; antennis griseis.

Clarence River.

Brown or greenish-brown, covered with a greyish-yellow, almost golden pile; head with an impressed line between the antennæ;

prothorax irregular, tuberous on each side the disc, with a smooth elevated black line in the centre, which shortly bifurcates posteriorly; scutellum transverse, rounded behind; elytra strongly punctured, two obscure costæ on each, the inner near the base with a small tuft of hair; beyond this the costæ, including two given off from the shoulder, are nearly obsolete, until at the declivity towards the apex the inner two become prominent; body beneath and legs greyish-fulvous, speckled with brown; antennæ fulvous, slender, slightly ciliated beneath.

Length 6 lines.

The pile on this insect under a lens seems of a golden hue, but seen in conjunction with the dull brown derm beneath it, the tone is very much sobered down. It is a very distinct species.

3. Hebecerus confertus.

H. niger, pube griseo-cinerea, nigro-setosus; prothoracis disco bicalloso; elytris irregularibus, plaga magna nigra albo-limbata pone medium; antennarum articulis septem ultimis duobus præcedentibus brevioribus.

Sydney.

Black, covered with a fine greyish-ashy pile, and with slender black setose hairs; head without an impressed line in front; antennæ brownish, the last seven joints together shorter than the preceding two; prothorax remotely punctured, a small but very distinct callosity on each side of the disc, behind and between these the prothorax is minutely corrugated: scutellum rounded behind, covered with a dense whitish tomentum; elytra coarsely punctured, somewhat hollowed out inside the shoulder and round the scutellar region, and again hollowed out in a longitudinal form posteriorly midway between the side and the suture, the edges of the hollow forming a kind of costa on each side, the outer of which is continued back to the shoulder; behind the middle a large, nearly transverse black patch, indistinctly bordered with white; body beneath and legs with a rough, greyish pile.

Length 4 lines.

Also very distinct: the surface of the elytra more irregular than in any other species; and the terminal joints of the antennæ more crowded than usual. It serves to show, once more, how uncertain are technical characters, and that in the descriptions of genera it is necessary to take into consideration details which it is scarcely possible to record, that in *Hebecerus plumula* the third antennal joint is scarcely longer than, or at most about half as long again as, the second, while it is about ten times longer in the species

just described. In other respects it is a true *Hebecerus*, and, therefore, in a generic description of the antennæ we should not be able to get beyond a very vague generalization.

Genus Exocentrus.

1. *Exocentrus erineus.*

E. fuscus, nigro-setosus; prothorace transverso, griseo-pubescente, antice posticeque rufo-marginato; elytris seriato-punctatis, plagis duabus griseis; antennis pedibusque fuscis.
Port Denison.

Dark-brown, pubescent, everywhere with long, black, setaceous hairs; head with an impressed line on the vertex; eyes large, approximating above; antennæ dark brown, longer than the body, very setose; prothorax transverse, with a spine at the side a little behind the middle, and directed backwards at a sharp angle, the disc entire, covered with a sparse greyish pubescence, the anterior and posterior margins dull red; scutellum semilunar; elytra much broader than the base of the prothorax, seriate-punctate, the punctures less regular towards the apex, a large greyish patch on the middle, and another near the apex of each, but both indistinct; body beneath and legs brown, with a short greyish pubescence.
Length $2\frac{1}{4}$ lines.

The genus *Exocentrus* is found in all parts of the world, but this is the first time that it has been recorded from Australia. The present species has more the outline of the European *Exocentrus balteatus* than of either of the two Aru *Exocentri* to which it might be expected to be more nearly allied, but it is much darker, and more setose. I have another species, apparently of this genus, from King George's Sound, but in too bad a state to be described.

Genus Niphona.

1. *Niphona miscella.*

N. nigro-setosa, pube grisea fuscaque varia; prothorace fortiter punctato, medio subcarinato; scutello griseo.
Port Denison.

Black, closely covered with a greyish pile, varied with brown of two or three shades, with scattered black setaceous hairs intermixed; head greyish-brown, with a slightly impressed line on the vertex; antennæ shorter than the body, slightly pilose, dark brown, spotted with grey; prothorax obscurely varied with dark brown and grey, with a few coarse punctures, and a slightly

elevated carina or crest in the mesial line of the disc; scutellum transverse, greyish; elytra remotely punctured, slightly concave towards the base, which is marked with a very slight, almost obsolete ridge, the apex rounded, a large oblique whitish-grey patch behind the middle, not meeting at the suture, and bordered with darker brown than the rest of the elytron; body beneath with a sparse yellowish-grey pile; legs with a varied brown and greyish pubescence, mixed with long white hairs.

Length 4 lines.

This *Niphona* will be readily distinguished from the other Australian species by its prothorax.

2. Niphona oblita.

N. nigro-setosa, pube ochracea grisea fuscaque varia; prothorace modice punctato, medio simpliciter convexo; scutello nigro.

New South Wales.

Black, closely covered with a brown pile, varied with ochraceous and a little grey, mingled with a few black setaceous hairs; head with an impressed line between the antennæ, not on the vertex; antennæ varied with brown and grey; prothorax regularly convex, a brown, nearly naked mesial stripe with small punctures, on each side two ochraceous stripes, between which is a grey stripe spotted with black; scutellum transverse, entirely black; elytra coarsely punctured, simply convex at the base, the apex truncate, or rather sub-sinuate, the outer angle slightly projecting, dark-brown, with little patches of ochraceous and grey, the latter at the middle forming an oblique, indistinct patch; body beneath with a coarse, greyish pile; legs with a greyish-mottled pubescence, the tarsi nearly black.

Length 4 lines.

Has a general resemblance to the last species, but the prothorax is without the crest, and the greyish elytral patch—which is so general in one form or another in this genus—is more central. The other two Australian species (*N. Bakewellii* and *N. irata*) may be distinguished, *inter alia*, by having no stripes on the prothorax.

Genus Symphyletes.

1. Symphyletes heros.

S. niger, subnitidus, vix pubescens; prothorace amplo, trans-

versim plicato; elytris subtrigonatis, apice sinuato-truncatis, lateribus maculis duabus magnis albo-pubescentibus.

Interior of Northern Australia.

Black, slightly nitid, with a few exceedingly delicate scattered white hairs; head remotely punctured, with a deeply impressed line in front; lip, epistome and palpi dark ferruginous; antennæ strongly fimbriated beneath; prothorax full and rounded at the sides, somewhat abruptly constricted in front, the disc transversely impressed with waved lines, two slight tubercles in the middle and another strongly marked at the side anteriorly; scutellum scutiform; elytra subtrigonate, the shoulders produced, two very slightly marked ridges at the base, where it is also more coarsely punctured, the apex sinuately truncate, the side with two very large pure white hairy patches of irregular figure; body beneath black, shining, each abdominal segment bordered with closely set white hairs; legs black, subnitid, anterior coxæ in the male with a short incurved spine.

Length 14 lines.

A noble and very distinct species, approaching in coloration *Rhytiphora cretata*, Pasc. *Rhytiphora*, Newm., may be distinguished from *Symphyletes* by its shorter and more compact form, more transverse prothorax with nearly parallel sides, and larger head, especially manifested in the strongly developed vertex, which has the effect of throwing the eyes far below the level of the upper line of the prothorax. *Symphyletes* is masculine (Συμφυλέτης) and not feminine, as Mr. Newman and others make it.

2. *Symphyletes fulvescens.*

S. fulvescente-pubescens, ochraceo varius; elytris subcylindricis, non tuberculatis, apice emarginatis.

Port Denison.

Somewhat narrow, covered with a short, dense, rich fulvous pile, varied with ochraceous; head rather broad and convex in front, the eyes small; antennæ slightly ciliated, spotted at the base with ochraceous; prothorax scarcely narrower anteriorly, the tooth at the side well marked, the disc irregular, with two small tubercles; scutellum subquadrate; elytra somewhat cylindrical, without tubercles, the apex of each slightly emarginate, the ochraceous markings consisting principally of a patch at the side, an oblique band commencing at the suture behind the middle and continued downwards and outwards, another on each side the

scutellum, and a few spots posteriorly; body beneath and legs covered with a close, ochraceous pile.

Length 8 lines.

A very distinct species, especially in the absence of tubercles on the elytra, and in the colour.

3. Symphyletes decipiens.

S. griseo-viridis; prothorace cylindrico, leviter corrugato; elytris extus albo-marginatis, apice anguste rotundatis.

Adelaide.

Greyish green, covered with a very delicate grey pubescence; head greyish white, with a small dark triangular spot behind each eye; antennæ luteous, with a thin grey pile; prothorax equal in length and breadth, sparingly punctured and very slightly corrugated in the middle, greyish green, varied with pale ochre; scutellum slightly transverse, rounded behind; elytra somewhat sinuate at the base, a little incurved behind the shoulder, then gradually tapering posteriorly, each ending in a very narrow and rounded apex, a pale ochreous patch on each side the scutellum, with a few small spots of the same colour on the disc, a few almost obsolete tubercles at the base, and a broad pure white stripe along the exterior margin; body beneath greyish, obscurely speckled with dark brown; legs with a tolerably copious greyish pubescence.

Length 7 lines.

Nearly allied to *Symphyletes nigro-virens*, Don., which, however, has a smoother and more transverse prothorax, contracted posteriorly, thicker and more pilose antennæ, and the elytra broader towards the apex, which is slightly truncate, presenting an angle externally. There are also striking differences in colour, which, as it is subject to vary to a certain extent, it is not necessary to specify.

4. Symphyletes derasus.

S. flavo-castaneus, nitidus; elytris subtrigonatis, granuliferis, apice truncatis, linea laterali dense albo-pubescente.

New South Wales.

Yellowish-chesnut, shining, the upper surface almost without pubescence; head rather broad, with a shaggy greyish pile in front, the eyes small, black; antennæ ciliated beneath, otherwise nearly naked; prothorax nearly cylindrical, the lateral tooth obsolete, the disc somewhat corrugated, with fine punctures and about six almost obsolete concolorous tubercles; scutellum trans-

verse, with a round, raised border posteriorly; elytra subtrigonate, sparingly punctured, with numerous concolorous tubercles on the disc, the apex truncate, a band of pure-white, densely set, short hairs along the side from the shoulder to near the apex; body beneath with a sparse greyish pile; legs nearly free from hairs, except a few at the base of the tibiæ and on the tarsi.

Length 8 lines.

I was at first inclined to consider this as only a very remarkable local variety of *Symphyletes viridis*, Don., a variety altered in colour, with the pubescence reduced to a minimum, the latter possibly from the age of the specimens. But the compact, pure white stripe of silky pile along the sides of the elytra seems to show that this is not the case, but that nudity is the normal condition. On a close examination there are also many points of difference which leave no doubt of its distinctness, as for instance, the more irregular prothorax, the form of the scutellum, and the truncate apices of the elytra. The male has a short spine on the anterior coxæ.

5. *Symphyletes farinosus.*

S. pubescens, griseus, albo fuscoque varius, et maculis fulvis dispersus; elytris basi tuberculis minutis sparsis, humeris callosis, apice truncatis; abdominis segmentis griseis, fulvo-marginatis.

Sydney.

Closely covered with a greyish pile, varied with white and dark brown, and banded or speckled with ochre-yellow; head yellowish, with two white longitudinal lines between the eyes, an impressed black line on the vertex; antennæ rather longer than the body, ciliated, grey, with paler spots; prothorax transverse, obscurely corrugated, without tubercles, and perfectly covered by the pubescence; scutellum broadly rounded posteriorly; elytra callous and projecting at the shoulder, incurved behind it, then slightly rounded, the apex truncate, near the scutellum the white predominates, taking a somewhat triangular shape, this is followed by more or less brown, the brown again predominating as an oblique band behind the middle, but bordering it anteriorly, the whole apical portion and a patch behind the shoulder are principally white; over all are spots of yellow, and smaller spots of black, these latter are owing to flattish granules at the base, and beyond it to the derm seen through the thinner pubescence at those points; body beneath greyish, the pectus and margins of

the abdominal segments ochre-yellow; legs greyish, tinged with yellow on the tarsi, the femora and tibiæ spotted with yellow.

Length 10 lines.

A beautiful and very distinct species.

6. *Symphyletes neglectus.*

S. dense cinerascente-pubescens, maculis ochraceis irroratus; prothorace lateribus antice dentato; elytris basi tuberculatis, maculis nigris nitidis adspersis, apice oblique sinuatis, bispinosis.

Sydney.

Covered with a close, pale ashy pubescence, slightly varied with darker and speckled with light ochre-yellow; head whitish, with ochre spots, and long white hairs on the face; lip and palpi ferruginous; mandibles black; antennæ ciliated beneath, the basal joints with a few long white hairs; prothorax a little shorter than broad, nearly smooth above, a short black tooth at the side anteriorly; scutellum rounded behind; elytra gradually narrowing from the shoulders, which are rounded and prominent, the apex of each obliquely sinuate and armed with two rather distant spines, the base with several small black tubercles which gradually diminish posteriorly, and are replaced by naked glossy black spots (the derm), the darker shades are so arranged as to throw the ashy portions into three or four large but very indistinct patches on each elytron; body beneath greyish, the abdominal segments bordered with yellowish silky hairs, sides of the metasternum spotted with ochre; legs ferruginous brown, with long hairs and little belts of greyish pile; anterior coxæ of the males with a strong recurved spine; fore-tibiæ in the same sex with a tooth on the middle beneath.

Length 9 lines.

This is the only Australian *Symphyletes* that I have seen which has a toothed protibia in the male. How far such a character is to be depended on is a question to be solved. This and the four following species belong to a group which is characterized by its grey or ashy colour, or both, more or less speckled with ochre-yellow. The elytra also are marked with small impressed spots, irregularly dispersed; in these the pubescence is wanting, so that the black derm becomes apparent. At the base of each spot a single short whitish hair is often visible, and this with the aid of an ordinary glass is seen to be considerably thicker than the rest. In this complicated system of coloration, there are, first, the black,

shining derm, visible wherever the pubescence is thin or wanting; secondly, the ochre-yellow spots on a grey or ashy ground, or both, the yellow portion being frequently more raised than the rest, while the ashy or sometimes nearly white part forms a band near the middle, or has a certain tendency to do so, and also a patch at the side before the band; and thirdly, a number of small shining granular tubercles, nearly always confined to the base, and disposed either irregularly or in three rows. It is to be hoped that this explanation will facilitate the comprehension of these descriptions, as the group is an exceedingly difficult one to portray.

7. *Symphyletes solutus.*

S. dense cinereo-albo-pubescens, maculis pallide ochraceis irroratus; prothorace subtransverso, lateribus haud dentato; elytris basi vix tuberculatis, apice oblique sinuatis, bispinosis. Port Denison.

Covered with a close ashy-white pubescence, varied with a darker ashy and speckled with light ochre; head whitish, with ochre markings on the vertex, and white hairs on the face; antennæ ciliated beneath, with long white hairs at the base; prothorax shorter than broad, corrugated above and particularly towards the sides, one of the anterior folds forming a slight projection at the side, but no tooth; scutellum somewhat triangular, the sides rounded; elytra broadest at the shoulder, narrowing posteriorly, the apex of each very hairy and obliquely sinuate with two small spines, the base with a few very small tubercles, which are nearly enveloped in the pubescence, and several black, impressed spots along the side, there are also about three very indistinct paler patches on the side of each, nearly in the middle; abdomen silvery-grey, the segments bordered at the side with pale yellow; sides of the metasternum with ochre spots; legs ferruginous brown, with long hairs and little belts of greyish pile.

Length 9 lines.

It will be seen from the description, that in many respects this species resembles the last. It differs, however, not only in its lighter colour, but in the more transverse and corrugated prothorax, and in the more triangular form of the scutellum, and the smaller tubercles on the elytra, which are scarcely perceptible without the aid of a good lens. The lower portion of the eye, also, is much smaller and more widely separated from its fellow.

8. *Symphyletes moratus.*

S. cinereo-pubescens, maculis pallide ochraceis dispersus; prothorace transverso, inæquali, subtuberculato; elytris apice sinuato-truncatis, haud spinosis, ad basin pauci-tuberculatis, pone medium fascia cinerea.

Port Denison.

Covered with a pale ashy pubescence, the black derm showing underneath at intervals, and sprinkled with light ochre; head obscurely spotted with ochre; antennæ ciliated beneath, greyish, spotted with ashy; prothorax broader than long, obsoletely bituberculate, the sides not toothed, indistinctly spotted with ochre; scutellum rounded behind; elytra narrowing from the shoulder, the apex of each sinuately truncate, without spines, a broad very pale ashy band below the middle, its anterior border very indistinct, its posterior marked by a dark irregular line, the side with a large patch of the same colour, the base with a few distant but prominent tubercles, one of which is situated on the shoulder; body beneath ashy, varied with ochre, especially on the abdomen; legs ashy, speckled with ochre and dark brown.

Length 11 lines.

Near *Symphyletes vetustus*, Pasc., but paler, less pubescent, the prothorax scarcely tuberculate, the band on the elytra broader, less irregular, and more indeterminate.

9. *Symphyletes munitus.*

S. griseo-pubescens, maculis ochraceis notatus vel reticulatus; prothorace leviter inæquali, antice constricto, disco sub-bituberculato; elytris apice subrotundatis, ad basin tuberculis seriebus tribus dispositis, pone medium fascia indistincta pallidiore.

Clarence River.

Covered with a loose greyish pubescence, spotted with ochre, the spots coalescing at intervals so as to give a sort of reticulated appearance; head varied with grey and yellow, the latter predominating; antennæ greyish yellow, ciliated beneath; prothorax about equal in length and breadth, contracted anteriorly, obscurely bituberculate, the side not toothed, varied with grey and ochre; scutellum rather narrow, rounded posteriorly; elytra gradually narrowing, the apex rounded and pilose, the base with three rows of tubercles, the outer composed of four tubercles, one of which is situated on the shoulder, the second and third rows of five each, an obscure greyish white band directly behind the middle,

anteriorly very indefinite, posteriorly bordered by a dark zig-zag line, the whole surface of the elytra marked with small black impressed spots (the derm); body beneath greyish, tinged with ochre; legs spotted with grey and ochre; coxæ of the males with a recurved spine.

Length 10 lines.

Owing to the loose sparseness of the pubescence, the glossy derm gives a slight appearance of varnish to the surface of this species, a peculiarity which is also possessed by *Symphyletes sodalis*, Pasc., but from this it is distinguished by its longer prothorax, more constricted anteriorly, and by the arrangement of its three rows of tubercles, the innermost of which is nearly equidistant between the suture and shoulder, while in *S. sodalis* it is almost close to the suture.

10. *Symphyletes ingestus.*

S. griseo-pubescens, maculis ochraceis notatus; prothorace leviter inæquali, subtuberculato, lateribus irregulariter rotundato, antice constricto; elytris apice rotundatis, ad basin pauci-tuberculatis, pone medium fascia cinerea distincta.

Sydney.

With a very short greyish pubescence varied with white and speckled (or semi-reticulated) with pale ochre yellow; head varied with grey, ashy and dark brown, the latter principally on the vertex; antennæ ciliated beneath, grey speckled with ashy; prothorax rather transverse, slightly irregular, with two very small almost obsolete tubercles on the disc, the side unequally rounded, confusedly spotted with ochre, ashy, and dark brown; scutellum glossy black, the centre only pubescent; elytra gradually receding from the shoulder, the apex rounded and densely fringed with short hairs, the base of each with about half-a-dozen tubercles, which are nearly confined to the region of the shoulder, one of them being situated on it, behind the middle a tolerably well defined whitish band, a whitish patch at the side between this and the shoulder, and a few smaller patches on the suture and near the apex; body beneath sprinkled with grey and ochre, the abdominal segments bordered with ochre; legs dark brown, with patches of ochre and grey; anterior coxæ of the males with a long recurved spine.

Length 12 lines.

The more irregular prothorax, especially at the sides, the

margined scutellum, and fewer basal tubercles on the elytra, are characters that will serve to distinguish this species.

Genus Rhytiphora.

1. *Rhytiphora rubeta.*

R. tenuiter pubescens, fusca, maculis pilosis rufo-luteis varia; scutello croceo-piloso; elytrorum dimidio basali tuberculato.

Sydney.

Dark brown, covered with a short thick greyish-brown pile, and spotted with reddish; head with black scattered punctures, and a line on the vertex and between the eyes, amid the short reddish ochraceous pile; antennæ rather longer than the body, ciliated beneath, brown with obscure greyish rings or spots; prothorax black, with a few ochraceous hairy spots, the sides nearly parallel, a single transverse fold in the middle and several impressed marks on the disc; scutellum slightly transverse, rounded behind; elytra callous and projecting at the shoulder, a little incurved at the side, then gradually rounded to the apex, several black, shining granules on the basal third, the reddish spots numerous and at the side sometimes confluent; body beneath chesnut red, with a dull greyish pile; legs obscurely spotted with reddish and brown.

Length 9 lines.

A species very distinct from any other known to me.

Genus Penthea.

1. *Penthea solida.*

P. fusca, pube cinerea brevissima tecta, maculis variis albis ornata; prothorace tuberculis tribus minutis instructo; elytris lineis duabus elevatis.

Clarence River.

Dark brown, covered with a very short greyish pile, with numerous small, variously formed, white spots, especially on the elytra; head rather large, an impresssed line and a few shallow punctures on the vertex, between the eyes and in front several white spots; antennæ with all the joints except the basal banded with white at the base; prothorax transversely rugose, with three small but sharply prominent tubercles on each side; scutellum rounded posteriorly; elytra broadest at the shoulders, with a few shallow punctures only at the base (where there are also a few small tubercles) and sides, and two elevated uninterrupted lines on each, that are gradually lost posteriorly; body beneath covered with a

coarsish white pile, spotted irregularly with black; femora covered with a white pile, except at the apex; tibiæ black, with a white band in the middle; tarsi white, the last joint and claws black.

Length 13 lines.

This species differs in very few points from *Penthea vermicularia*, Don., and is perhaps only a local variety. The three small but sharply prominent tubercles on the side of the prothorax, however, and the continuous lines on the elytra not broken by the presence of tubercles, which seem to make up those lines on *P. vermicularia*, are sufficiently distinctive to warrant its separation.

2. *Penthea costata.*

P. picea, fere glabra; prothorace transversim rugoso; elytris fortiter bicostatis, interspatiis et margine laterali pube alba griseo-varia.

Sydney.

Pitchy, nearly glabrous, except on the middle and sides of the elytra, and beneath; head with an impressed line on the vertex, and a slightly raised line on each side of it, a few small punctures principally in front; antennæ pitchy, the third and some of the succeeding joints faintly tinged with white; prothorax transversely rugose, the sides feebly tuberculate; scutellum scutiform; elytra broadest at the shoulder, then slightly incurved, and again becoming nearly as broad as at the base, the surface undulating and marked, particularly at the base, with tubercles and punctures, two very strong costæ on each, the spaces between them and on each side, the suture posteriorly and the external margin, with a short silvery white pile, mottled with greyish; body beneath and legs pitchy, speckled with white hairy patches.

Length 11 lines.

I have seen only one specimen of this species. The peculiarly glabrous condition of the upper surface, it may be suspected, may be due to abrasion. From the similarity of the pattern on both sides I think not. In any case it is a very distinct species.

3. *Penthea pullina.*

P. ferruginea, vel rufo-fusca, pube grisea, fulvo-varia; prothorace medio vix rugoso; elytris bicostatis, costis tuberculato-interruptis.

Western Australia.

Ferruginous, sometimes very dark or nearly brown, with a thin apparently very deciduous pubescence, principally on the elytra,

which are mottled with ashy and yellowish, and spotted with brown; head with a narrow, impressed line on the vertex; antennæ from the third to the seventh joints inclusive with the basal half white; prothorax somewhat irregular, with a few impressed points; scutellum rounded posteriorly; elytra nearly parallel, each with two prominent costæ, which are marked at intervals by coarse tubercles, the base with a very few punctures, and scarcely any tubercles; body beneath and legs covered with a pure white pile, speckled with ferruginous.

Length 6 lines.

One of my specimens of this species is nearly glabrous, and the colour appears to vary. It is a well marked species.

4. *Penthea scenica.*

P. dense pubescens, rubra, albo-plagiata, et nigro-maculata; prothorace haud rugoso, latere tuberculis duobus elongatis instructo; elytris sub-costatis.

Port Denison.

Covered with a close-set, brick-red pile, varied with large white patches and spotted with black; head with an impressed line on the vertex; antennæ with the first two joints white, the rest black, with the apex and base of each only white, except the last, which is black at the apex; prothorax not rugose, two prominent tubercles at the side, one above the other, and one or two smaller ones behind them; scutellum transverse, rounded behind; elytra nearly parallel, two scarcely projecting costæ on each; the white patches are disposed thus—three common to both elytra, one scutellar, one behind this near the centre, the third towards the apex, and two proper to each, both at the side, but the posterior largest and extending obliquely upwards; the black spots are round, numerous and well defined, and besides these are many minute punctures in the substance of the elytra; body beneath and legs covered with a pale yellowish pile, mottled with fulvous.

Length 7 lines.

In colour this species slightly approaches *Penthea pardalis*, Newm., but is in all respects so very distinct as not to require a comparison.

5. *Penthea miliaris.*

P. angustior, dense pubescens, ochracea, nigro-maculata; pro-

thorace haud rugoso, latere tuberculis duobus elongatis instructo, elytris vix costatis.

Port Denison.

Narrower than the last, and differing in other respects; in the ochraceous colour, with a few paler spots, in the absence of the white patches on the elytra, the absence, or nearly so, of punctures, the slight or almost obsolete costæ, and the smaller, nearly triangular scutellum.

Length 6 lines.

Genus Zygocera.

1. *Zygocera lugubris.*

Z. nigra, pube nigra cinereaque tecta; prothorace lateribus conico, disco mutico; elytris oblongis, bi-apiculatis, basi unituberculatis, nigris, medio apiceque cinereis nigro-maculatis.

New South Wales.

Black, with a short black pile varied with ashy; head ashy, with black stripes in front and at the sides; antennæ black, the third and intermediate joints slightly ashy at the base; prothorax conical at the side, a deeply impressed line near the posterior margin, and another less marked anteriorly, the disc not tuberous and very obscurely marked with ashy; scutellum rounded behind, black, bordered with white; elytra much broader than the prothorax at the base, with a single tubercle and an elevated line on each, the sides slightly rounded, the apex with a small spine at the suture, and a large one externally, the basal portion and an irregular patch behind the middle black, the rest dull ashy, with black spots; body beneath glossy black, the pectus varied with ashy, and an ashy patch containing a single spot on each side of the four basal segments of the abdomen; legs black, obscurely ringed with ashy; tarsi ashy, with the last two joints and claws black.

Length 5—6 lines.

Every one of the species of this genus, except *Zygocera cœnosa*, which is unknown to me, is very distinct, and there would be no difficulty in finding characters that would apparently justify raising almost each of them to a separate genus. Still there are certain similarities that appear to lead from one species to another, although it must be admitted that it is scarcely satisfactory to combine them all under one generic name, as I am disposed to do. I believe Erichson (Wiegman's Arch. 1842, p. 224) is the only author who has described the genus *Zygocera*, the one under this name characterized by Mr. James Thomson (Arch. Ent. i. p. 189)

being no other than the *Callipyrga* of Mr. Newman. The *Zygocera pallidicornis* of the former author appears to be in fact the *Callipyrga turrita*, Newm. M. Leon Fairmaire has described another very distinct species from Chili.

2. Zygocera cuneata.

Z. fusca, pube cinerea tecta; prothorace lateribus conico, disco mutico, nigro-fasciato; elytris subanguste trigonatis, biapiculatis, basi unituberosis, maculis fasciisque duabus nigris.

New South Wales.

Dark brown, with a yellowish ashy pile, varied with black bands and spots; head obscurely striped, a black impressed line on the vertex; antennæ pitchy, with a thin greyish pubescence; prothorax conical at the sides, the disc not tuberous, an anterior impressed line, and three interrupted nearly black bands; scutellum subtriangular, but rounded at the apex, covered with greyish hairs; elytra narrowly trigonate, with an elevated tuber at the base and a slightly raised line on each, the apex bispinous, the apical two-thirds ashy, without the yellow tint; two irregular bands not meeting at the suture, one nearly in the middle, the other behind it, and a few spots principally at the base, black; body beneath glossy black, the pectus irregular, pubescent, a greyish hairy patch on each side of the four basal segments of the abdomen; legs dark brown, the base of the posterior femora and the tibiæ obscurely ashy, and the two basal joints of the tarsi ashy.

Length 5 lines.

The nearest ally of this species is *Zygocera pumila*, from which, however, it differs very decidedly in coloration and in the broader and more conical form of the sides of the elytra.

3. Zygocera spiloptera.

Z. lutea, pube grisea tecta; prothorace lateribus dente minuto instructo, disco mutico; elytris ovatis, basi simplicibus, apice rotundatis, basi maculisque (una majori postica) luteis.

Hunter's River.

Yellowish-brown, approaching to ferruginous, with a scanty grey pile; head and antennæ clothed with short grey hairs; prothorax with a small sharp tooth at the side, the disc not tuberculate, marked with two or three obscure bands; scutellum rather transverse, rounded posteriorly; elytra slightly incurved behind the shoulder, then very gradually rounded towards the apex which is entire, the base not tuberculate, grey spotted with luteous, except

the apical portion, which is luteous, partially spotted with grey, and having at the side a large luteous patch, with one larger nearly white spot and two or three smaller spots marked on it; body beneath glossy luteous, the pectus somewhat pubescent, with a greyish patch enclosing a single shining spot on each side of the four basal abdominal segments; legs sparsely pilose.

Length 4—5 lines.

This species has a small, abrupt tooth at the side of its prothorax, which, however, has otherwise quite the character of those in which the disc is not tuberculate. It also differs in the rounded apex, and in the absence of the elevated line which runs into the outermost of the two spines, which always occurs when the apex is bispinous.

Genus Oricopis.

Caput immersum, *fronte* quadrata. *Oculi* emarginati. *Antennæ* mediocres, subapproximatæ, articulo basali subturbinato, tertio quarto breviori, cæteris multo brevioribus. *Prothorax* elevatus, bituberosus, lateribus dentatus. *Elytra* tuberculifera. *Pedes* mediocres, *femoribus* clavatis. *Prosternum* simplex. *Mesosternum* antice productum. *Corpus* ovatum, rugosum.

It is with some hesitation that I have separated the species described below from *Zygocera*, but there is such an amount of variation in its aspect and characters as would, I believe, preclude any one from searching for it in that genus. The characters, however, considering how variable they are in *Zygocera* itself, are but slight; the form of the basal joint of the antennæ, and the difference in the length of the third as compared with the fourth joint (in direct opposition to the true *Zygoceræ*), being certainly the principal.

1. *Oricopis umbrosus.* (Pl. XXIII. fig. 2.)

O. rufo-fusca, pube pallidiori tecta; prothoracis disco tuberibus bifidis remotis; elytris tuberculorum lineis duabus obliquis instructis.

Port Denison.

Dark chocolate brown, covered, except on the tubercles, with a paler pubescence; antennæ scarcely longer than the body, slightly ciliated beneath, the basal joint short, swelling out towards the apex, the third much shorter than the fourth joint, each of the remainder not half the length of the fourth; prothorax rather broader

than long, with a stout lateral tooth nearly in the middle, directly above it a bifid tuber, which is thus placed at a distance from its fellow, the space between them somewhat concave, except at the base, where another small concavity is formed; scutellum rounded posteriorly; elytra much broader than the prothorax at the base, slightly rounded at the sides, the apex entire, from each shoulder two oblique lines of tubercles, the inner of four, the outer of seven, all very glossy, the intervals coarsely but sparingly punctured, with a few smaller tubercles among them, at the sides the punctures more crowded; body beneath and legs with a sparse greyish pile, more concentrated at the sides of the abdomen; femora strongly clavate.

Length 6 lines.

Genus Thyada.

Caput immersum, *pedunculis* antennariis elevatis, contiguis. *Oculi* emarginati. *Antennæ* elongatæ, approximatæ, fimbriatæ, articulo basali cylindrico, tertio et quarto longissimis, cæteris decrescentibus. *Prothoraæ* brevis, inæqualis, lateribus dentatus. *Elytra* subcostata. *Pedes* validi, *femora* clavata. *Prosternum* clavatum, antice bidentatum. *Mesosternum* antice declive. *Corpus* ovatum.

1. *Thyada barbicornis.* (Pl. XXII. fig. 4.)

The type of this genus is *Zygocera barbicornis*, Pasc., described in our Transactions (N.S. vol. v. p. 34), and there doubtfully referred to *Zygocera*. The extraordinary bearding of the antennæ, however, gives it a very peculiar aspect, and the form of the pro- and meso-sterna is different from the more typical *Zygoceræ*. There are, however, slight variations in the characters of the sterna throughout the genus.

Genus Saperda.

1. *Saperda stigmatica.*

S. cervino-fusca, albo-pilosa, antennis haud annulatis; capitis vittis quinque, prothoracis vittis duabus, elytrorum maculis numerosis plagisque duabus, flavescentibus.

Port Denison.

Closely covered with a rather coarse greyish-brown pile, and with numerous erect slender white hairs; head greyish-brown, with five indistinct stripes on the vertex and behind the eyes; antennæ very hairy, greyish, speckled with brown; prothorax

greyish-brown, with two pale yellowish discal stripes; scutellum rather transverse, rounded behind; elytra broadest at the base, where it is considerably broader than the prothorax, greyish-brown, with several small scattered spots at the base and in a line along the posterior half of the suture on each side, an oblique irregular patch commencing in the middle and continued downwards and outwards to the margin, and between this and the shoulder a small triangular patch at the side, all of a pale yellow colour; body beneath and legs with a thick greyish pubescence, speckled with yellowish-brown.

Length 6 lines.

A larger and proportionally stouter species than *Saperda paulla*, Germ., and otherwise very distinct.

2. *Saperda mystica.*

S. fusca, albo-pilosa; antennis haud annulatis; prothoracis vittis duabus, elytrorumque notis variis, cinereis.

New South Wales?

Closely covered with a smooth brown pile and with scattered, slender, white hairs; head brown, nearly unicolorous; antennæ ashy, spotted at the base; prothorax brown, with two discal, pale ashy stripes, which are connected by a narrow transverse band in the middle; scutellum rounded posteriorly; elytra broader than the prothorax at the base, brown, with pale ashy longitudinal patches, which are partially connected along the suture on each side, but not touching it; another set of uncertain patches, extending from the shoulder to the apex at the side, but breaking up into small spots at the apex, and a very distant zig-zag line obliquely behind the middle, all of the same ashy colour; body beneath with a dull ochreous pile, varied with greyish; legs hairy, brown, speckled with ashy.

Length 6 lines.

Narrower than the last species, with a smoother pile, and, notwithstanding a considerable difference in colour, closely allied to it. The four Australian species of *Saperda* differ from the true *Saperdæ* of Europe, in the presence of a tubercle or tooth on each side of the prothorax near its anterior border, and in the elevated prosternal process. The antennæ also are never so long as the body. *Saperda Bohemanni* and *Saperda erythaca* should rather be placed with *Phytœcia* on account of their bifid claws.

Genus Mycerinus.

1. *Mycerinus luctuosus.* (Pl. XXII. fig. 5.)

M. dense tomentosus, niger, maculis albis ornatus; capite prothoraci latitudine æquali.

Port Denison.

Covered with a short thick black pile, varied with rather large white spots or stripes; head as wide as the prothorax, a white line over the eye and a white spot on the vertex; antennæ shorter than the body, the apex and base of each joint except the first two, and the third joint, nearly entirely white; prothorax nearly quadrate, about equal in length and breadth, a stripe at the side and two interrupted stripes on the disk white; scutellum rounded behind; elytra convex and nearly parallel to the apex, which is somewhat pointed, each marked with about ten white spots; body beneath and legs with a dull greyish-white pubescence.

Length 5 lines.

In colour this insect resembles *Mycerinus zebrinus*, an Indian species, but it is more cylindrical in form, with fewer and rounder spots.

2. *Mycerinus uniformis.*

M. ferrugineus, fulvescente-pubescens; elytris paullo elongatis, sub-depressis, basi sparse punctatis.

Port Denison.

Ferruginous, closely covered with a pale fulvous pubescence; head concave in front, with a slightly impressed line on the vertex; antennæ longer than the body, slender, setaceous; prothorax about equal in length and breadth, narrower anteriorly, rounded at the sides, with a few punctures at the base; scutellum transverse, smooth in the middle; elytra rather elongate, somewhat depressed, gradually narrower from the shoulder to the apex, which is rounded, the base with a few small punctures; body beneath and legs with a thinner and paler pubescence.

Length 5 lines.

Closely allied to *Mycerinus aridus*, but different in colour, and more slender in its proportions generally. Nevertheless it may be only a local variety.

Genus Ropica.

1. *Ropica incivilis.*

R. obscure griseo-pubescens; elytris fere obsolete albo-maculatis, apice obtuso-angulatis.

Port Denison.

With a short dull greyish pubescence; head with a few coarse

punctures between the eyes; antennæ rather shorter than the body, the second joint about one-third the length of the first, the third twice as long as the first but shorter than the fourth; prothorax rather broader than long, the sides evenly rounded, a few scattered punctures on the disk; scutellum transverse; elytra with a few almost obsolete whitish spots, coarsely punctured in rows, which have an oblique direction at the base, the apex of each obtusely angular; body beneath and legs covered with a very fine pubescence.

Length 4 lines.

In the Society's Transactions I have described several species of this genus, but one or more of them may prove to be identical with some of those described by Mr. Newman under the name of *Pterolophia* (Entom. pp. 370, 380). From his description, however, I think *Pterolophia* may be referred to *Praonetha*, Blanch. He describes the antennæ as having the first and third joints of equal length, the fourth rather shorter. This is the character of *Praonetha*, while in *Ropica* the first joint is frequently not half as long as the third, and this is sometimes shorter than the fourth. It may be added that in the former genus the first joint is elongated and cylindrical, or even thicker towards the apex, while in *Ropica* it is short and more or less ovate. It is possible that *Ropica* may have to be divided, in one division the species being somewhat depressed and navicular in outline, like the one described above, the other more convex and approaching *Praonetha* in its shorter and more compact form. But in all these characters,—and the remark will apply generally to the *Longicornia*,—there are gradations that render an absolute limitation impossible.

2. *Ropica geminata.*

R. pube fulvo-grisea vestita; prothorace vittis duabus fuscis; elytris circa scutellum, plagisque lateralibus fuscis, regione suturali maculisque duabus pone medium albis, apice acute angulatis.

Sydney.

With a close, buffish-grey pubescence; head with a narrowly impressed line in front; antennæ longer than the body, the fourth joint considerably longer than the third; prothorax rather broader than long, the sides rounded but slightly irregular, the disc marked with two brown stripes; scutellum transverse; elytra slightly elongate, the apex of each acutely angular, the disc

punctured, partly in rows having unequal spaces between them, but at the base more irregularly, round the scutellum and various patches along the sides dark brown, the sutural region and two very distinct longitudinal spots behind the middle of each elytron white; body beneath and legs luteous, with a fine greyish pubescence.

Length 3 lines.

This comes very near a species from Aru (*Ropica stigmatica*, Pasc.), but is more elongate, the elytra terminating in a more acute angle and without the white sutural patch.

Genus Atimura.

Caput prothoracis latitudinis, inter oculos quadratum. *Oculi* prominuli, reniformes. *Antennæ* distantes, setaceæ, articulo basali brevi, turgido, tertio quarto longiori, cæteris gradatim decrescentibus. *Prothorax* breviter sub-cylindricus. *Elytra* parallela. *Pedes* breves, *protibiis* curvatis. *Ungues* simplices. *Coxæ* anticæ spinosæ. *Corpus* subangustatum.

This is essentially a Saperdoid form, probably not far removed from such genera as *Agennopsis* and *Estola*. I have noticed a species very like the one here described in Mr. Wallace's collections from the Indian Isles.

1. *Atimura terminata*. (Pl. XXIII. fig. 6.)

A. fusca; elytris interrupte quadricostatis, apice fulvo-pubescente.

Port Denison.

Brown, inclining to pitchy; head as broad as the prothorax, quadrate between the eyes, an impressed line on the vertex, with two or three bands of fulvous hairs; antennæ shorter than the body, slightly ciliated beneath, the third and fourth joints curved, the former twice as long as the basal joint; eyes prominent, uniform, the upper part narrow, and not approximate; prothorax rather longer than broad, subcylindrical, the sides very slightly rounded, the disc closely punctured, with short scattered hairs, which become more condensed anteriorly, forming a fulvous border to the prothorax; scutellum rounded behind; elytra broader than the prothorax, nearly cylindrical, very coarsely punctured, and rather suddenly rounded at the apex, where alone it is covered with a dense fulvous pile, with four interrupted raised lines or costæ on each, the three inner costæ ending abruptly, but previously becoming more elevated, the middle one of the three approaching

most nearly the apex, the fourth or outer costa terminates gradually in it; body beneath with a greyish-fulvous pubescence; prosternum expanding posteriorly; legs short, fore tibiæ somewhat curved, anterior coxæ shortly spined; last tarsal joint long and robust; claws simple.

Length 4 lines.

Genus Isalium.

Caput exsertum, antice productum, prothorace angustius. *Antennæ* mediocres, ♀ elongatæ, ♂ articulo basali obconico, intermediis apice unilateraliter dilatis. *Prothorax* subcylindricus, lateribus muticis. *Elytra* elongata, parallela. *Pedes* mediocres, *femoribus* subclavatis.

This genus is proposed for the reception of certain species hitherto placed with *Didymocantha*, but from which they differ in their elongated muzzle, antennæ, unarmed prothorax, and other characters. *Strongylurus scutellatus*, Hope, is the type, and it includes *Didymocantha thoracica*, Pasc., *D. cylindricollis*, Pasc., and probably *Coptopterus cretifer*, Hope.

Genus Phoracantha.

1. *Phoracantha fallax.*

P. robusta, fusca; prothorace subquadrato, rugoso-punctato, tuberculis tribus nitidis, lateribus spinoso; elytris flavo-trimaculatis, apice bispinosis.

Sydney. Adelaide.

Robust, dark-brown; head coarsely punctured, a lightly impressed line between the eyes; antennæ as long as the body, pubescent, the third to the sixth or seventh joints, inclusive, spined; prothorax opaque, subquadrate, about equal in length and breadth, coarsely and confluently punctured, with three distant, shining tubercles, a short sharp spine at the side; scutellum triangular, pubescent; elytra gradually narrowing behind, coarsely punctured at the base, each with two spines at the apex, and three yellow patches, one in the middle, one between it and the base, and a third directly before the outer spine; body beneath chesnut-brown, finely punctured, the abdomen pubescent and nearly impunctate; palpi and legs ferruginous, the latter with a close grey pile.

Length 10 lines.

Phoracantha quinaria, Newm., differs from this species in having no tubercles on the prothorax. It must be borne in mind that

the extent, and even the number, of the yellow patches which adorn the elytra of nearly all the species of this genus, are variable. The pattern, however, remains pretty nearly the same, and the apical spot, when it occurs in the species, appears to be constant in the individual. Throughout the genus, the elytra have always coarse, crowded punctures at the base, which gradually become smaller and more scattered towards the apex, each puncture having generally a single hair arising from its base.

2. Phoracantha polita.

P. subrobusta, fusca; prothorace oblongo, quinque-tuberculato, lateribus spinoso; elytris albis, nitidissimis, fusco-plagiatis, præsertim plaga una basali alteraque apicali, apice bispinosis.

Rockhampton. Sydney.

Moderately robust, dark brown; head covered with pale yellowish hairs, a narrow impressed line between the eyes; antennæ longer than the body, luteous, with a delicate greyish pubescence, the third to the sixth joint, inclusive, spined; prothorax oblong, narrowed anteriorly, with five shining tubercles, the posterior pair nearly divided (or otherwise with seven tubercles), the interspaces with a fine, somewhat silky, pile, the side with a short, conical spine; scutellum triangular, with a greyish pubescence; elytra very gradually narrowing behind, the basal half coarsely punctured, the rest minutely punctured, each with two spines at the apex, ivory white, with dark-brown glossy patches, which are variable in extent, of the two principal, one occupies the whole of the base, except the side, and another the central part from the middle to near the apex, between the two there is a small spot on each elytron, or the two may be joined by a varying line along the suture; body beneath dark brown, the pectus pubescent, the abdomen smooth and shining; legs brown, with a delicate greyish pubescence.

Length 8 lines.

Apparently coming nearest to *Phoracantha trimaculata*, Hope, but, so far as I can judge without a comparison of the two, with a more glabrous and differently sculptured prothorax.

3. Phoracantha pubescens.

P. subrobusta piceo-fusca; prothorace nitido, tuberculato, lateribus inæquali, mutico; elytris dimidio basali punctatis, fascia

ante medium et plaga magna basin versus flavis, dimidio apicali impunctatis, pubescentibus, apice truncatis.

Port Curtis.

Moderately robust, dark brown; head coarsely punctured, with an impressed line in front; antennæ as long as the body, luteous, finely pilose, the third to the sixth joints, inclusive, spined; prothorax nitid, oblong, unequal, three tubercles on the disc, the central one ovate, behind irregular or subtuberculate, the side rounded with two or three prominences, but not spined; scutellum rounded behind, pubescent; elytra slightly narrowing behind, the apex truncate, the basal half strongly punctured, a pale yellowish band and a large patch towards the base, the posterior half impunctate, and covered with a fine greyish pubescence; body beneath chesnut-brown, the abdomen pubescent; legs luteous, slightly pilose.

Length 8 lines.

The pubescence of the posterior half of the elytra is characteristic of this very distinct species.

4. *Phoracantha discreta.*

P. gracilis, fusca; prothorace oblongo, quinque-tuberculato, tuberculo medio lanceolato, lateribus prominulo, mutico, basi constricto; elytris angustatis, flavo-trimaculatis, apice sinuatis.

Sydney.

Slender, dark brown; head coarsely punctured, an impressed line between the eyes; antennæ longer than the body, pitchy, ciliated, the third to the sixth joints, inclusive, spined at the apex; prothorax oblong, nearly opaque, with five well-defined tubercles on the disc, the centre one lanceolate with the point forwards, the side with an abrupt prominence; scutellum rounded behind; elytra tapering, the base very rugosely punctured, each with its apex sinuate, and with three pale yellow patches, the one directly in the middle, forming almost a band; body beneath and legs glossy brown, bases of the femora and coxæ reddish.

Length 4 lines.

Resembles the next species (*P. scitula*), but is darker, more opaque, the prothorax broader, the tubercles more prominent, and the punctuation of the elytra more rugose.

5. *Phoracantha scitula.*

P. gracilis, luteo-fusca, nitida; prothorace oblongo, quinque-

tuberculato, lateribus prominulo, mutico, basi constricto; elytris angustatis, apice truncatis, plaga basin versus, altera mediana, tertiaque sub-apicali, flavis.

Port Denison.

Slender, luteous brown, shining; head roughly punctured, an impressed line between the eyes; antennæ longer than the body, luteous, slightly ciliated, the third, fourth and fifth joints spined at the apex; prothorax oblong, opaque, narrower at the base than anteriorly, rugose, with five tubercles on the disc, the central one elliptic, the side with a somewhat abrupt prominence; scutellum rather elongate, pilose; elytra tapering, truncate at the apex, each with three pale yellow patches, one somewhat lateral and midway between the second (which is nearly central) and the third (which is nearly at the apex); body beneath and legs luteous, sparingly pubescent.

Length 4 lines.

This graceful little species is allied to *Phoracantha unifasciata*, Hope, (why so called it is difficult to say,) but in that species the prothorax is broader and nitid, and there is no apical spot on elytra.

6. *Phoracantha bifasciata.*

P. gracilis, fusca, nitida; prothorace oblongo, tuberculis tribus longitudinalibus, lateribus irregulari, mutico; elytris muticis, fascia lata mediana, altera apicali, flavis.

Port Denison.

Slender, brown, shining, sparingly pilose; head dark ferruginous, with a few coarse punctures; eyes rather large, black; antennæ shorter than the body, luteous, slightly pilose, the third joint spined, the fourth and fifth nearly unarmed; prothorax dark ferruginous, oblong, sparingly and coarsely punctured, three longitudinal tubercles placed somewhat posteriorly, the side irregular but not spined; scutellum somewhat transverse, rounded behind; elytra slightly depressed, very gradually narrowing posteriorly, rounded at the apex, a broad band in the middle and another at the apex, pale yellow; body glossy beneath, dark ferruginous on the pectus, and luteous on the abdomen (in the female, each of the three intermediate segments has an ovate impression at the side, filled with long, silky hairs); legs luteous, with slender, scattered hairs.

Length 5 lines.

A very distinct species, remarkable for the little depressions on the abdomen of the female, which are exactly similar in character

to those of *Obrium ciliatum* (see p. 559), only that in the latter there are four pairs of them instead of three.

Genus Elete.

Caput exsertum, *fronte* brevissima, *mandibulis* porrectis. *Oculi* divisi, partibus approximatis, prominulis, supra sub-approximatis, infra distantibus. *Antennæ* elongatæ, setaceæ, basi subremotæ, articulo basali curvato, versus apicem incrassato, quarto tertio longiore, cæteris gradatim brevioribus. *Prothorax* elongatus, irregulariter cylindricus. *Elytra* angustata, sub-parallela, abdomine breviora. *Pedes* elongati; *coxæ* anticæ sub-approximatæ; *femora* clavata, basi attenuata; *tarsi* breves, articulo primo cæteris longiori. *Mesosternum* latum, postice emarginatum. *Corpus* angustatum.

The more important characters of this genus, such as the slender habit, the large and prominent coxæ, and the attenuated basis of the femora, point to some of the forms which group themselves round *Obrium*, although in habit it resembles some *Mallocerœ*, which are nearly allied to *Phoracantha*. The divided eyes, however, and the elytra imperfectly embracing the abdomen, are found only in genera allied to the first. With regard to the anterior coxæ, the forms from globular to conical are not only graduated, but in neighbouring genera, where the same form might be expected to recur, there is a marked difference. Compare, for instance, *Listrocerum*, where they are remarkably elongated and conical, with *Smodicum*, or *Molorchus major* with *Necydalis* minor*,

* There is great confusion respecting these names. *Necydalis* was first used by Scopoli (Faun. Carniol.), and afterwards by Linnæus (Iter Œland.), and applied by them to *minor* and *umbellatarum*, *major* being then unknown. In the Fauna Suecica, the latter is for the first time described, and is placed immediately after *minor*. In the twelfth edition of the Syst. Naturæ, *major* comes first, and is followed, not only by *minor* and *umbellatarum*, but by eight species belonging to *Œdemera*, *Asclera*, and other Heteromerous genera. Then came Fabricius (Syst. Eleuth.), who, calling the first of these groups by the new name of *Molorchus*, continued that of *Necydalis* to the remainder. So far as the latter change is concerned, he has not been followed; but *Molorchus* has been adopted by many authors. Now, it is quite evident that *major* and *minor* belong to different genera; accordingly, Mr. Newman long ago proposed *Heliomanes* for the latter, having, however, used the term in the first place for an Australian Longicorn, which afterwards was found to be congeneric; and more recently M. C. G. Thomson, in his Skandinaviens Coleoptera, has proposed *Cœnoptera* for the same species. We have thus four names for the two genera. If we are to avoid the introduction of a name which has never been used on the continent (*Heliomanes*), I think priority will compel us to confine the term *Necydalis* to *minor* as the Linnæan type in the first instance, and then *major* naturally falls into *Molorchus*, as the first of the species described by Fabricius.

or *Stenopterus rufus* with *Acyphoderes aurulentus*. In *Obrium cantharinum* the coxæ are very nearly conical, while in the nearly allied *Axinopalpis gracilis* they are so slightly produced, that practically they may be defined as globose. All these genera, according to some systematists, would be placed in a family co-equal with *Prionidæ* and *Lamiidæ* that has *Molorchus* for its type. *Obrium* and *Molorchus*, however, I consider represent respectively two very distinct sub-families.

1. *Elete inscripta.* (Pl. XXII. fig. 2.)

E. livida, vittis fuscis figurata; femoribus intermediis et posticis, basibus exceptis, fuscis.

Sydney.

Livid yellow, with a short seta-like pubescence, and marked with a few longitudinal or zigzag lines; head exserted, with a short narrow front strongly sulcated between the insertion of the antennæ; a black stripe behind the eyes; mandibles porrect; lip very small; palpi truncate; eyes prominent, completely divided, the upper pair subapproximate, the lower remote; antennæ longer than the body, setaceous, slightly pilose, the basal joint claviform, the third shorter than the fourth, with a fine spine at the apex, the fourth longest, the rest gradually diminishing to the last; prothorax about twice as long as broad, irregularly cylindrical, with a broad central and a narrow black stripe at the side; scutellum triangular, rather closely covered with fine diverging hairs; elytra elongate, gradually narrowing behind, the apex truncate with numerous setiferous punctures, and marked on the shoulder and behind the middle with dark brown irregular and nearly longitudinal lines; body beneath testaceous, finely punctured; legs slender, femora clavate, the clavate portion of the middle and posterior femora dark brown.

Length 6 lines.

Genus Hesthesis.

1. *Hesthesis angulatus.*

H. ater; elytris divergentibus, postice flavo-maculatis; abdomine supra duabus infra tribus fasciis flavis.

King George's Sound?

Black; base of the elytra greyish; front, anterior and posterior margins of the prothorax, a round spot on each elytron posteriorly, a patch on the episterna of the metathorax, a band on the first and

another on the fourth upper abdominal segments, and a band on each of the three inferior basal segments, clear lemon-yellow; sterna and legs covered with a whitish pile; prothorax rounded at the sides; elytra diverging posteriorly, each terminating externally in an acute angle, which, owing to a short incurvation, is slightly hooked, the external margin gradually incurved behind the shoulder.

Length 10 lines.

This is one of the best marked species of the genus, although allied to *Hesthesis cingulatus*. The form of the elytra, beginning to diverge at about half way from the apex of the scutellum, and the clear lemon-yellow of its numerous markings, are sufficiently distinctive. I have seen only one example.

Dr. Howitt mentions a "common" species at Melbourne having *red* antennæ, which appears to be near *Hesthesis cingulatus*. This is probably undescribed.

2. Hesthesis murinus.

H. niger; elytris integris, linea suturali postice curvata, alba; abdomine supra fascia alteraque infra albis.

New South Wales.

Black; elytra greyish; front, anterior margin of the prothorax, a band on the upper and another on the lower basal segments, silvery-white; a short oblique patch of the same colour towards the posterior margin of the elytra, connected with a paler stripe along the suture; prothorax nearly as long as broad, rounded at the sides, covered with a sparse greyish pile; elytra rounded at the sides, nearly truncate at the apex; femora brownish-red; body beneath with scattered greyish hairs.

Length 6 lines.

As the elytra in *Hesthesis* only cover the metathorax, the whole abdomen above is visible through the transparent wings; and it is therefore necessary to observe, that the first or upper basal segment of the abdomen does not correspond with the basal segment beneath, and that this forms one of the five abdominal rings in connexion with the second upper, and so on for the remainder.

Mr. Newman describes the males of *Hesthesis* as having 12-jointed antennæ. This is an error. The eleventh joint, it is true, is notched in the middle, as it very often is in this family, but the slightest examination will show that it is *only* a notch.

It is very likely that in some individuals of the same species

the number of bands on the abdomen may vary. I have seen instances where one of the bands has been only partial. The best characters in this genus are to be found in the forms of the prothorax and elytra. The species described above is the most soberly coloured of the genus, and very distinct from any other known to me.

3. Hesthesis vigilans.

H. fuscus; elytris postice intus rotundatis, extus apiculatis, linea suturali postice curvata, crocea; abdomine supra duabus infra etiam duabus, aliquando tribus, fasciis luteis.

New South Wales.

Black, elytra yellowish-brown, paler towards the suture; front, anterior margin of the prothorax, patch on the episterna of the metathorax, bands on the upper and lower basal segments, and two others on the third lower and fourth upper segments respectively (sometimes a narrower band on the second lower also), bright saffron-yellow; a short, transverse patch of the same colour towards the posterior margin of the elytra, connected with a paler stripe along the suture; antennæ black, passing into reddish-brown towards the apex; prothorax rounded at the sides, covered with a coarse pile, tinged more or less with yellow; elytra rounded internally at the apex, the sides also rounded, and terminating externally in a small obtuse angle; legs ferruginous, tarsi brown.

Length 6 lines.

Mr. Newman's description of *Hesthesis bizonatus* applies to this species so far as the number of abdominal bands is concerned, but the colour of the antennæ and legs is entirely different. I have not seen his species, which appears to have been known only from a specimen in the Zoological Society's Museum, although Dr. Howitt speaks of it as being found at Melbourne. It is the only described species that is not in my collection.

4. Hesthesis acutipennis.

H. niger; elytris subdivergentibus, apice angulatis; macula transversa postica crocea, abdomine supra tribus infra quatuor fasciis luteis.

New South Wales.

Black, elytra greyish-brown, front, anterior margin of the prothorax and more slightly the posterior also, and an oblique spot on the elytra, saffron-yellow; patch on the episterna of the metathorax, three bands on the abdomen above—one on the basal,

another on the fourth, and the third on the fifth—and four bands beneath, one on each abdominal segment, except the last, sulphur-yellow; last abdominal segment above and below ochraceous; antennæ reddish-brown; legs ferruginous; prothorax transverse, angulated at the sides; elytra rounded at the sides, slightly diverging posteriorly, the apex pointed.

Length 7 lines.

The form of the elytra at the apex is something like that of *Hesthesis plorator*, but the elytra themselves are much shorter. The short prothorax, with its angulated sides, is very distinctive of this species.

5. Hesthesis vesparius.

H. niger; elytris truncatis, sutura late grisescente-marginatis, basi humerisque aureis; antennis ferrugineis, articulis quatuor basalibus nigris.

New South Wales.

Black; front, sides of the prothorax anteriorly, base of the elytra and their anterior angles, and the first, second, third and fifth (at the margin) upper segments of the abdomen golden-yellow; patches on the episterna of the metathorax, sides of the first, middle of the second, the whole of the third and fourth lower segments, fulvous; prothorax equal in length and breadth, the sides very slightly and regularly rounded; scutellum black, triangular; elytra rounded at the sides, obliquely truncate inwards and downwards, a very broad, greyish sutural stripe from the shoulder to the apex, at the upper part of which, near the scutellum, is a rich yellow spot, below this at the angle is another spot; legs and antennæ reddish-ferruginous, the latter with the four basal joints black.

Length 7 lines.

The form of the prothorax, and the coloration of the elytra and antennæ, will serve to distinguish this pretty and very distinct species.

Genus Solimnia.

Caput exsertum, *fronte* brevissima. *Oculi* emarginati. *Antennæ* elongatæ, remotæ, articulo basali subpyriformi, tertio cæterisque plus minusve æqualibus, subserratis. *Prothorax* transversus, lateribus dente armatus, disco lævigato. *Elytra* oblonga. *Pro-* et *meso-sterna* angustata, simplicia. *Corpus* subdepressum.

The genus to which *Solimnia* most nearly approximates appears

to be *Cerambyx*, from which it is essentially distinguished by the form of the pro- and meso-sterna, which are very narrow and depressed, the coxæ therefore nearly contiguous, and projecting far beyond the edges of their cotyloid cavities. In all true *Cerambyces* the contrary is the case, and the mesosternum is bilobed posteriorly. Nothing that ought to be referred to *Cerambyx* proper, in my opinion, has the prothorax so regular and free from rugosities as in this genus.

1. *Solimnia sublineata.* (Pl. XXII. fig. 3.)

S. sub-fusca, ternuiter pubescens ; elytris pallidioribus, humeris exceptis, subnitidis.

New South Wales.

Brown, elytra, except at the shoulders, legs, and antennæ, paler, all covered with a thin, greyish pubescence ; head very short in front, simply concave between the eyes, thickly punctured ; antennæ much longer than the body, the third joint a trifle longer than the fourth, otherwise all, except the first two, are more or less equal in length, and dilated on one side, so as to give the antennæ a serrated appearance ; eyes emarginate, the lower portion by far the largest and most prominent, not approximate above ; palpi rather long, obtuse ; prothorax transverse, thickly punctured, a strong tooth on each side ; scutellum triangular ; elytra broadest at the shoulder, the side slightly incurved, the apex rounded, with faintly-raised longitudinal lines on each, of these two are more marked than the rest ; body beneath with a coarser, greyish pile ; legs rather slender, femora not clavate, intermediate and posterior tarsi with the basal joint somewhat elongated.

Length 9 lines.

Genus Cerambyx.

1. *Cerambyx nubilus.*

C. niger, griseo-pubescens ; prothorace lateribus obtuse tuberculato, transversim plicato ; elytris apice bispinosis ; antennarum articulo tertio elongato, apice subnodoso.

Queensland.

Brownish-black, with a very thin, silky greyish pubescence ; antennæ with the basal joint comparatively slender, curved, the third elongate, nearly as long as the fourth and fifth together, and only slightly nodose at the apex ; tibiæ at the distal extremity and tarsi, and the upper part of the posterior femora at the base

covered with golden hairs; inner spine at the apex of the elytra much smaller than the outer one, the rest as in *Cerambyx sericus*, Newm. (*Hammaticherus turbinaticornis*, Germ.)

Cerambyx, Linn., is now restricted to those Longicorns of which *Cerambyx cerdo*, Linn., is the type. Many authors substitute for it *Hammaticherus* (Meg., Dej.), but the *Hammaticherus*, Serv., must be confined to *H. bellator* and its allies, (*Ploccæderus*, Dej.).

Genus Obrium.

1. *Obrium ciliatum.*

O. castaneum, nitidum, albo-setosum; elytris, lateribus exceptis, stramineis; antennis ferrugineis, setosis.

Sydney.

Glossy chesnut-brown (except the elytra), with long, slender, white hairs; head with a deep transverse impression above the epistome; eyes rather large, black; antennæ longer than the body, ferruginous, with long setose hairs, a small spine at the apex of the third joint; prothorax slightly punctured with few hairs, the disc irregular, with a rounded callosity on each side; scutellum rounded behind; elytra elongate, parallel, with deeply impressed crowded punctures, from each of which issues one of the setaceous hairs, of a pale straw-colour, with the two basal thirds of the sides only brown; body beneath dark chesnut, polished, paler on the abdomen; in the female the four basal segments of the abdomen have on each of their sides an ovate cavity, filled with closely-set yellowish hairs.

Length $3\frac{1}{2}$ lines.

In our *Obrium cantharinum* and its congeners, as well as in *Stenhomalus*, *Deilus*, &c., the third abdominal segment of the female is curiously contracted, and densely clothed with long hairs. In *Obrium ibidionoides* there is a transverse, ovate, hairy cavity at the base of each segment, except the last. In the species described above we see a third modification of this remarkable structure. It is probable, however, that this and other species now referred to *Obrium* will eventually be separated from that genus, if these and other characters should prove to be of more than specific importance.

Genus Phalota.

Caput subverticale; *fronte* turgida; *mandibulis* parvis. *Oculi*

mediocres, remote divisi, supra distantes. *Antennæ* remotæ setaceæ, articulo basali brevi, curvato, tumido, tertio cæterisque subæqualibus. *Palpi* breves, obtusi. *Prothorax* elongatus, antice latior, postice constrictus. *Elytra* parellela. *Pedes* breves; *coxæ* anticæ elongatæ, contiguæ; *femora* incrassata. *Corpus* gracile.

This genus appears to be allied to *Obrium*, although its head is so vertical as almost to bring it into the Saperdoid group (near *Stenostola*, for instance), were it not for other characters, such as the absence of emargination on the intermediate tibiæ, and the obtuse palpi. The insect is remarkable for its swollen front, which merges above into the two large antennary tubers.

1. *Phalota tenella*. (Pl. XXIII. fig. 1.)

P. fusca, subnitida, vix pubescens; elytris basi aliquando luteis.

Port Denison.

Dark-brown or black, with scarcely any pilosity, the head, prothorax and pectus luteous yellow, shining; head with a few scattered punctures, short, subvertical, bulging out in front, the antennary tubers large, separated at the base by a considerable concavity; eyes rather small, divided, the two portions widely apart, the upper smallest, and remote from its fellow; mandibles small, nearly vertical; antennæ as long as or longer than the body, the basal joint rather short and slightly curved, tumid, the rest, except the second, more or less equal; palpi short, obtuse; prothorax irregularly and very sparsely punctured, nearly twice as long as broad, and as broad as the head for three-fourths of its length, when it suddenly contracts; scutellum rounded; elytra a little depressed, coarsely and rather thickly punctured, the base sometimes more or less luteous; body beneath glossy black, the pectus luteous; legs with a slight tint of luteous.

Length $2\frac{1}{2}$ lines.

Genus Clæadne.

Caput breve, *fronte* transversim quadrata. *Oculi* reniformes. *Antennæ* elongatæ, setaceæ, 11-articulatæ, basi distantes, articulo primo breviter obconico, tertio quarto longiore, cæteris subæqualibus, ultimo vix distincto. *Palporum* articulo ultimo ovato. *Prothorax* ovatus. *Elytra* angustata. *Pedes* sub-elongatæ, *femora* clavata, *tarsi* breves. *Prosternum* minutum, compressum.

In my M.S. Catalogue of Australian *Longicornia* I have placed

this genus between *Agapete* and *Ischnotes*. It differs very much from both in habit, those two being very remarkable, although in quite a different way, while *Clœadne* has a very commonplace look. Of all the Australian forms, perhaps, it comes nearest to *Amphirhoë* in outline, but that genus, owing to its longer muzzle, belongs to another category of the family. I received my specimen from Mr. Macleay; a second in Mr. Bakewell's collection is supposed to be from Adelaide.

1. *Clœadne melanaria*. (Pl. XXIII. fig. 5.)

C. nigra; elytris singulis lineis duabus elevatis basi griseo-hirtis instructis.

New South Wales.

Black, opaque; head coarsely and closely punctured, very short, and transversely quadrate in front; eyes reniform; antennæ longer than the body, setaceous, 11-jointed, distant at the base, the first joint short, obconic, the third longest, the fourth much shorter, the fifth nearly as long as the third, the remainder nearly equal to the fifth, the last scarcely distinguishable from the preceding one; palpi short, with the terminal joint ovate; prothorax ovate, with coarse, crowded punctures, and a few scattered, erect hairs; scutellum triangular; elytra narrow, parallel, two elevated lines on each, the inner not extending to half the length of the elytron, the outer continued to the apex, the base and both lines clothed with greyish-white hairs; body beneath and base of the femora chesnut-brown; abdomen short, gradually tapering from the base.

Length 5 lines.

Genus Typhocesis.

Caput fronte brevi, quadrata. *Oculi* reniformes. *Antennæ* distantes, elongatæ, setaceæ, articulo basali subpyriformi, tertio quarto longiore, cæteris plus minusve subæqualibus, vel gradatim brevioribus. *Palpi* apice subtriangulares. *Prothorax* rotundatus, disco subdepresso, lateribus dentatis. *Elytra* brevia, subparallela. *Pedes* elongati, *femora* clavata, *tarsis* intermediis et posticis angustatis, articulo basali elongato. *Prosternum* elevatum, subacutum.

This genus belongs to the group of which *Hemesthocera*, *Homalomelas*, *Prothema*, and *Euryarthron* are members, differing from all in the form of the prothorax and clavate femora. The angle formed by the depression of the prothorax creates a sort of ridge on each side.

1. *Typhocesis Macleayi.* (Pl. XXIII. fig. 4.)

T. fusca, subopaca ; elytris singulis lineis duabus obliquis ; tarsis flavidis.

Port Denison.

Dark brown, subopaque, with soft, scattered hairs, particularly on the prothorax ; head short, quadrate in front, with a transverse impression beneath the antennæ ; lip small, transverse ; eyes of moderate size, reniform ; antennæ distant at the base, longer than the body, setaceous, the basal joint subpyriform, the third longer than the fourth, the fifth and sixth about equal, the rest very gradually decreasing in size ; palpi ferruginous, the last joint narrowly triangular ; prothorax rounded, depressed, or nearly plane above, the side somewhat irregular, with a short tooth posteriorly ; scutellum transversely subtriangular ; elytra very short, the sides nearly parallel, rounded at the apex, very closely or nearly confluently punctured, with three very slightly-raised longitudinal lines in the middle of each, the side and sutures bordered with pale yellow, and at the base an oblique, yellowish line, commencing at the shoulder, and another rather beyond the middle, neither reaching to the suture ; body beneath and legs chesnut-brown, shining, the tarsi yellowish ; prosternum raised, terminating in a short tooth posteriorly.

Length 6 lines.

Genus Phacodes.

1. *Phacodes bispinosus.*

P. fuscus, pube cinerea irroratus ; prothorace subtransverso, antice latiori ; elytris apice bispinosis.

Hab. ——?

Robust, brown, inclining to pitchy, with scattered, irregular patches of pale-greyish hairs ; head entirely covered with greyish hairs ; antennæ stout, twice as long as the body in the male ; prothorax subtransverse, rounded at the sides, much broader in front, with three nearly obsolete tubercles on the disc ; scutellum transversely triangular ; elytra simply punctured, considerably broader than the prothorax at the base, very gradually tapering posteriorly, the apex of each armed with two well-developed spines ; body beneath reddish-brown, covered with an uniform greyish pubescence ; legs pitchy-brown, covered with a close greyish pile.

Length 12 lines.

This is a species very likely to be confounded with *Phacodes*

obscurus, Fab., but it is very distinct, especially in its more robust form, shorter prothorax, transverse scutellum, elytra spined at the apex, and other characters. *Phacodes* differs very slightly from *Hesperophanes;* the chief points appear to be the absence of tubercles on the disc of the prothorax of the latter, and the shortness of the fourth joint of its antennæ (a common character among the *Callidium* forms); the more typical species of *Phacodes* have the third and three or four following joints spined at the apex.

Genus Callidium.

1. *Callidium ascæmoides.*

C. nigrum, subnitidum; prothorace subtransverso, disco depresso sub-bituberoso; antennis brevibus, articulo tertio duobus sequentibus conjunctis longiore.

Adelaide.

Black, slightly nitid, with a few slender erect hairs; head coarsely punctured, a slight, impressed line between the eyes; antennæ rather more than half as long as the body, the third joint rather longer than the fourth and fifth together; prothorax depressed, broader than long, rounded at the sides, very coarsely punctured, except in the centre, with two tolerably large but very slightly elevated tubers placed transversely, with an impunctate space between them; scutellum transverse, rounded posteriorly; elytra oblong, depressed, with nearly parallel sides, and strongly marked with rugose, irregular impressions; body beneath pale brown, strongly punctured; legs slightly pitchy; femora clavate.

Length 6 lines.

The dark uniform colour, and the length of the third antennal joint, will readily distinguish this from any other Australian species.

2. *Callidium eburatum.*

C. rufo-ferrugineum, opacum; prothorace rotundato, basi constricto; elytris nigro-fuscis, rugoso-punctatis, fasciis duabus angulatis albis; femoribus clavatis, basi gracilibus; antennis articulo tertio quarto longiore, cæteris sub-æqualibus.

Sydney.

Reddish ferruginous, opaque, with a few white scattered hairs; head thickly punctured; eyes widely emarginate; antennæ shorter than the body, the third joint longer than the fourth, the succeeding nearly of equal length; prothorax slightly longer than broad, rounded at the sides, contracted at the base, with coarse crowded

punctures; scutellum narrowly subtriangular; elytra dark brown, covered with coarse confluent punctures, with two narrow zig-zag, ivory-like white bands, the upper not meeting at the suture; body beneath obscure luteous; legs dark brown; femora strongly clavate, slender at the base.

Length $3\frac{1}{2}$ lines.

Allied to *Callidium cleroides*, White, but with more tapering elytra, irregular angulated bands, and thicker antennæ.

Genus Brachytria.

1. *Brachytria centralis.*

B. vix angustata; elytris lineis duabus longitudinalibus elevatis; scutello apice acuto.

Port Denison.

Proportionally shorter than *B. gulosa*, and sparsely covered with slender erect black hairs; head and prothorax luteous-yellow, coarsely punctured, the latter rounded and nearly equal in breadth and length; scutellum narrow, acutely triangular, black; elytra with the sides nearly parallel, slightly projecting at the shoulder, the apex rounded, coarsely punctured, bright blue, a large pale straw-coloured patch principally before the middle, on each elytron two well marked raised lines running from the shoulder to the apex; body beneath, except the propectus and throat, antennæ and legs, black; propectus and throat luteous.

Length 4 lines.

Described from a single example, and therefore, knowing how variable is its congener *Brachytria gulosa*,* I have said nothing about the colour in the diagnosis, the species being well distinguished by having only two elevated lines on each elytron, and the apex of its scutellum acute. It appears to me that *Brachytria latebrosa* and *B. pulcherrima* would be better placed with *Pytheus*, if both genera are to be retained.

Genus Pempsamacra.

1. *Pempsamacra subaurea.*

P. fusca, squamis aureo-brunneis tecta; prothorace postice bicalloso, lateribus subintegro; elytris maculis duabus fuscis.

Sydney.

Chesnut brown, covered with dark golden yellow scales above;

* This species varies from almost entirely black to black, with more or less yellow or white, and red; and from a prothorax strongly corrugated and opaque to one perfectly smooth and glossy.

head concave between the eyes, and without an impressed line; antennæ much shorter than the body, the last six joints shortly triangular, the third and fourth beneath, and the fifth ringed with white in the middle; prothorax punctured, much longer than broad, slightly tuberous at the sides, with two spreading callosities at the base, the disc entire; scutellum very transverse; elytra rather elongate, covered, except the two spots on each—one in the middle, the other towards the apex—with short curved scales of a dark-golden tint; body beneath thickly covered with silvery-white scales; legs with yellowish scales.

Length $3\frac{1}{2}$ lines.

The smallest and narrowest member of the genus, which now contains five species. The last five joints of the antennæ are shorter and more transversely triangular, and the prothorax is longer and less irregular than in any other species; all of them, except *Pempsamacra pygmæa*, are remarkable for the beautiful metallic white clothing of the underside.

Genus Brachopsis.

1. *Brachopsis nupera.*

B. rufa; elytris infuscatis; abdomine pedibusque nigro-chalybeatis.

Sydney.

Head luteous-red, shining, sparingly punctured; antennæ shorter than the body, black, the first joint obscurely marked at the base with reddish; prothorax impunctate, velvety, luteous-red, rather longer than broad, constricted anteriorly, the side bluntly conical; scutellum small, triangular; elytra very narrow, pale-reddish brown; legs, postpectus, and abdomen, blackish-chalybeate; antepectus luteous-red.

Length 6 lines.

Rather too close, perhaps, to *Brachopsis concolor*, W. W. Saund., but at the same time I am quite convinced that very few Coleopterists would combine it with that species. Besides the difference in colour, the prothorax is considerably narrower, especially anteriorly, and the tarsi are narrower and longer. This latter character, however, is probably only sexual, and the other differences might be bridged over if we had a larger series of specimens, particularly from localities between Tasmania and Sydney, the homes of the two forms respectively.

Genus Macrones.

1. *Macrones capito.*

M. fulvo-rufus; antennis nigris, apicem versus sensim pallidioribus; elytrorum carinis basi excepto, femoribus posticis basi, tibiisque medio, nigro-chalybeatis.

Port Curtis.

Fulvous-red, on the prothorax approaching to a golden orange; head coarsely punctured, rather broad, with the sides parallel below the eyes; antennæ black, but becoming gradually paler from the fifth or sixth joint; lip very small; eyes nearly round, black; prothorax roughly punctured, rather longer than broad with a strongly marked, quadrate gibbosity in the middle, and a strong tubercle on each side; scutellum triangular; elytra rather broader than the prothorax at the base, where they are fulvous-red, gradually tapering to the apex, each with four rugose carinæ, which, except at the base, are steel black, the intervals being nearly white; first abdominal segment elongate, slender, pale green, the rest and sterna ferruginous-red; legs very slender, tibiæ of the intermediate and posterior pair, except at their extremities, and basal half of the post-femora, black; posterior pair of tarsi white.

Length 11 lines.

Of the five species of *Macrones*, this approaches the most nearly to *Macrones rufus*, W. W. Saund., but differs in the colour of the antennæ and elytra, and the black intermediate and posterior tibiæ. Amongst the genera that may be grouped around *Stenoderus*, *Macrones* and *Enchoptera* are at once distinguished by their elytra diverging at the suture, their prolonged muzzle, and entire, rounded, or only slightly ovate, eyes.

Of these genera, however, *Enchoptera* differs from *Macrones* chiefly in its more slender proportions, narrower tarsi, and in the basal joint of the anterior pair being linear and not triangular. *Brachopsis* comes very near those genera, but it has no muzzle. *Psilomorpha* is another ally, distinguished by the normal suture of the elytra, and differing from *Stenoderus* chiefly in the elongate basal joint of the tarsi. *Oroderes* again, notwithstanding its reniform eyes, cannot be placed very far from these genera; and, much as they differ in habit among themselves, I am not disposed to separate very widely *Stephanops*, *Diotima*, *Eroschema*, *Tessaromma*, *Bardistus*, *Tricheops*, *Uracanthus*, &c., and even *Bimia* (through *Akiptera* and *Tropis*). Many of these genera have elongate, often conical anterior coxæ, with the cotyloid cavity forming, with few exceptions, a very large angle externally.

Genus Aphneope.

Caput elongatum, antice productum, pone oculos in collo constrictum. *Oculi* emarginati. *Antennæ* filiformes, remotæ, articulo basali elongato claviformi, tertio quarto longiori, quinto quarto æquali, cæteris gradatim decrescentibus. *Palpi* apice obtusi. *Prothorax* elongatus, antice posticeque constrictus, lateribus et disco armatus. *Elytra* oblonga, subparallela. *Pedes* graciles, *tarsorum* articulo basali elongato. *Corpus* angustum.

This beautiful genus I place after *Tessaromma*, Newm., which Mr. James Thomson, in his "Essai," refers with *Chlorida*, *Phoracantha*, and others, to his "Division *Eburitæ*." I have no hesitation, however, in grouping both genera with *Stenoderus*, *Tritocosmia* and their allies, which, in Mr. Thomson's arrangement, belong to the "Legion (or Sub-tribe) *Lepturitæ*." I am disposed to agree with Dr. Leconte in not considering the *Lepturidæ* a distinct family of *Longicornia*, but rather that it is composed of several minor groups or sub-families in correlation only to the other sub-families of *Cerambycidæ*. It is in my opinion quite impossible to lay down any satisfactory characters by which the *Lepturidæ* may be distinguished as a whole. And the rigid adherence to a single character can only lead to the most unnatural combinations. As a proof of this, we have *Distenia* removed by Dr. Leconte from his *Lepturidæ* because of its globose anterior coxæ, and placed between *Criocephalus* and *Callichroma*. Now, in regard to these anterior coxæ, I cannot avoid expressing my opinion, that from globose to conical they are so graduated that in practice any reliance placed on their form must be received with caution. In reality the difference between a *shortly conical* coxa and a *globose* one is so slight, especially when we take into consideration that these terms are only used approximately, that it is often very puzzling to say which phrase would be the most accurate. Now in *Tessaromma* the anterior coxæ are very prominent, with a sort of hour-glass contraction in the middle; in *Aphneope* they are moderately prominent and but shortly, if at all, conical; in *Tritocosmia Digglesii* they are decidedly conical; in *Tritocosmia Roei* they are neither conical nor globose, but simply transverse; and between these two *Tritocosmia rubea* occupies an intermediate place. Many other examples of the same kind might be given.

1. *Aphneope sericata.* (Pl. XXII. fig. 1.)

A. purpureo-brunnea; elytris pubescentibus, maculis albo-sericeis dispersis, tertia apicali, nigris; antennis, tibiis, tarsisque testaceo-ferrugineis.

Port Denison.

Purplish-brown or claret-colour, the head and prothorax closely punctured with a few scattered erect hairs; the elytra with a short velvety pubescence, the posterior third deep black but the pubescence ceasing on the apical portion, before the black a line of white spots, others more dispersed towards the base; these spots are shallow impressions on the elytra, which are lined with white silky hairs, radiating from nearly a common centre; body beneath, except the four last abdominal segments and femora, luteous-brown, the four last segments black; antennæ, tibiæ and tarsi pale ferruginous. Head produced and subquadrate in front, rather protuberant behind and below the eyes, then suddenly constricted into a narrow neck; prothorax with a strong conical tooth at the side behind the middle, on the disc, nearly in the centre, are two well-marked tubers; scutellum scutiform; elytra slightly incurved at the sides, the apex rounded and convex above; antennæ scarcely so long as the body.

Length 8 lines.

The genus *Tropis*, of Mr. Newman, does not appear to have been described. The following are its characters.

Genus Tropis.

Caput porrectum, productum, *fronte* quadrata. *Oculi* reniformes, horizontales. *Antennæ* lineares, 11-articulatæ, inter oculos insertæ, distantes, articulo basali elongato, claviformi, tertio cæterisque plus minusve subæqualibus, vel paullo decrescentibus. *Prothorax* sub-elongatus, antice postice constrictus, lateribus armatus vel conico-productus. *Elytra* subdepressa, costulata; *coxæ* anticæ prominulæ, contiguæ. *Acetabula* antica valde angulata. *Mesosternum* parvum. *Tarsi* mediocres, dilatatæ.

Mr. Newman gives as the type his *Rhagiomorpha oculifera* (Ann. Nat. Hist. v. p. 21), a very rare insect, from Tasmania. *Tropis dimidiata*, Newm., the other species, is very differently coloured, but I can see nothing to warrant its generic separation.

Genus Phaolus.

Caput breve, rotundatum. *Oculi* reniformes. *Antennæ* 12-articulatæ, inter oculos insertæ, distantes, elongatæ, subsetaceæ, articulo basali brevissimo, incrassato, tertio cæterisque, ultimo excepto, subæqualibus. *Palpi* apice truncati. *Prothorax* transversus, lateribus dentatis. *Elytra* brevia, subparallela. *Pedes* breves, *tarsorum* articulo basali triangulari. *Prosternum* postice truncatum, *mesosterno* depresso.

The 12-jointed, subsetaceous antennæ sufficiently characterize this genus, which in most other respects is nearly allied to *Pœcilosoma metallicum*, Newm., which, however, is not a *Pœcilosoma*, as I have pointed out below.

1. *Phaolus Macleayi.* (Pl. XXIII. fig. 3.)

P. cupreo-violaceus; palpis oculisque fuscis.

New South Wales.

Rich copper, with violet reflections, especially on the head and prothorax; head very short in front, coarsely punctured, with a deep impression on the vertex and between the eyes; lip very small, black; antennæ 12-jointed, subsetaceous, longer than the body, distant at the base, inserted between the eyes, the basal joint very short and thick, the third also somewhat thick, the rest, except the last, about equal in length, the last shorter and rather compressed, as well as the two or three preceding it; prothorax transverse, scarcely wider than the head, with scattered black hairs, sparingly punctured, and somewhat corrugated, the side with a moderate tooth towards the base; scutellum rounded posteriorly; elytra glabrous, minutely punctured; body beneath violet, with a blackish pile.

Length 6 lines.

Genus Iotherium.

Caput breve. *Oculi* reniformes. *Antennæ* 11-articulatæ, distantes, breves, apicem versus crassiores, articulo basali obconico, tertio cæteris longiori, tribus ultimis confertis. *Prothorax* transversus, lateribus spinosis. *Elytra* ampla, subparallela. *Prosternum* postice truncatum, *mesosterno* depresso.

The *Pœcilosoma metallicum* cannot properly be referred to *Pœcilosoma*, as in that genus the sterna are constructed quite differently, the mesosternum being elevated into a sharp keel, the anterior part of which is received into a notch of the prosternum.

The type of *Iotherium* is a rare and beautiful insect from Tasmania; but I have lately received from Mr. W. Macleay the same species, taken, it appears, in the neighbourhood of Sydney. In Victoria it does not appear to be uncommon.

EXPLANATION OF THE PLATES.

PLATE XXII.

Fig. 1. *Aphneope sericata.*
2. *Elete inscripta.*
3. *Solimnia sublineata.*
4. *Thyada barbicornis.*
5. *Mycerinus luctuosus.*

PLATE XXIII.

Fig. 1. *Phalota tenella.*
2. *Oricopis umbrosus.*
3. *Phaolus Macleayi.*
4. *Typhocesis Macleayi.*
5. *Clœadne melanaria.*
6. *Atimura terminata.*

XLVI. Hemipterorum *exoticorum Generum et Specierum nonnullarum novarum Descriptiones.* Auctore Doct. Carolo Stål.

[Die 3° Aug. 1863.]

Platypleura, Am. et Serv.

1. *P. limbaticollis.*—Pallide olivaceo-virescens; verticis fascia angusta arcuata, fascia lata irregulari genarum, loris, limbo laterali thoracis utrimque acute angulati, maculis duabus vel quattuor basalibus scutelli, tegminum areola basali parteque dimidia basali clavi, alis, excepto limbo hyalino, abdominis fasciis percurrentibus dorsalibus fasciisque abbreviatis ventralibus, nigris; tegminum partibus circiter duabus tertiis apicalibus vitreis, hic illic obsolete subfusco-nebulosis, anastomosibus maculaque apicali et subapicali venarum longitudinalium nigro-fuscis. ♀

Long. 30, exp. tegm. 94 mill.

Africa occid., Ashanti. (Mus. Brit. et Oxon.)

Oxypleura limbata, Walk., excl. syn.

Platypleuræ limbatæ, Fabr., affinis, capite latiori, thorace utrimque acutius angulato, tegminibus angustioribus, colore picturaque distinctissima. Caput basi scutelli fere latius, vertice oculo transverso duplo latiore, fronte basi nonnihil tumida et prominula, medio longitrorsum distincte sulcata, circiter dimidium latitudinis faciei occupante. Ocelli ab oculis quam inter se duplo longius distantes. Rostrum metastethii apicem vix superans. Thorax latissimus, utrimque acute angulato-dilatatus. Tegmina proportionaliter angusta, margine costali levissime curvato, costa basin versus leviter dilatata, costa venaque intracostali contiguis. Metasternum disco convexiusculum, antice haud productum, medio sulcatum.

2. *P. Westwoodi.*—Remote sericea, pallide olivaceo-virescens vel flavescens, macula media fasciaque utrimque laterali verticis, macula vel fascia lata genarum, maculis nonnullis minutis

thoracis, maculis quattuor basalibus, duabus discoidalibus minoribus pone medium maculaque sublaterali oblongo-obtriagulari scutelli, fasciis basalibus segmentorum abdominis, dorsalibus latis, ventralibus angustis, tarsis anterioribus totis basique tarsorum posticorum, vitta exteriore tibiarum anticaram nec non alis nigro-fuscis aut nigris, harum fascia latissima irregulari media, limbum posteriorem haud attingente, limboque testaceo-flavescentibus; tegminibus fuscescentibus, fascia obliqua prope basin sordide testaceo-flavescente, macula subcostali longe ante medium maculaque discoidali pallide testaceo-flavescentibus, pellucidis, maculis nonnullis majusculis pone medium in seriem transversam subcontinuam dispositis, macula subcostali prope apicem, maculisque quattuor marginis apicalis vitreis, anastomosibus obscurius fusco-marginatis, areis apicalibus apice et prope apicem ad venas longitudinales maculis parvis geminis obscure fuscis notatis. ♀

Long. 25, exp. tegm. 78 mill.

Ceylon. (Mus. Oxon.)

Pl. phalænoidi, Walk., a qua *Pl. interna*, Walk., haud distingui potest, quoad formam thoracis affinis, aliter picta; differt præterea statura minus crassa, capite proportionaliter latiore, ocellis plus duplo longius ab oculis quam inter se remotis, frontis sulco longitudinali minus profundo, costa basin versus minus dilatata, maculis vitreis tegminum multo paucioribus et minoribus, genitalibus feminæ magis productis, metasternique basi inter pedes intermedios magis producta.

3. *P. præcellens*.—Olivaceo-flavescens, verticis fascia angusta fere media, frontis fascia subbasali, genarum fascia media, fronte lorisque magnam ad partem, thoracis maculis nonnullis parvis, maculis quattuor basalibus, litura triangulari media, macula laterali media vittulaque sublaterali basali, alis, exceptis maculis duabus transversis albidis limbi postici, fasciis basalibus segmentorum dorsalium abdominis nebulisque tegminum, ante medium pallide sordide virescentium, nigris aut nigro-fuscis; lateribus thoracis dilatatis, operculis genitalibusque fuscis. ♂

Long. 29, exp. tegm. 82 mill.

Sierra Leone. (Mus. Oxon.)

P. Kæmpferi similis, vertice proportionaliter angustiore, fronte magis producta, thorace magis dilatato, parte dilatata angulum

rectum formante, colore picturaque tegminum alarumque distinctissima. Vertex oculo transverso duplo latior, ocellis ab oculis quam inter se duplo longius remotis. Frons convexiuscula, basi nonnihil producta, medio longitrorsum distincte sulcata. Thorax marginibus lateralibus anticis marginibus lateralibus posticis brevioribus. Tegmina ante medium pallide subsordide virescentia, pone medium fuscescentia, parte basali fascia obliqua irregulari longe ante medium posita, aream internam basalem totam impictam haud occupante, fasciaque pone medium, prope costam antrorsum producta, obscure fuscis; maculis nonnullis, ante et pone venulas transversas positis, maculisque subapicalibus, apicem arearum apicalium et partem limbi apicalis occupantibus, pallidis, obscurius fusco-cinctis; costa basin versus modice dilatata, costa venaque subcostali distantibus, basin et apicem versus convergentibus; area apicali septima octava breviore.

4. *P. cœlebs.*—Sericea, supra testacea, subtus cum pedibus grisea; capite superne alisque sordide flavescentibus, verticis medio fasciaque laterali apicali, fronte, macula basali excepta, maculis duabus minutis pone medium thoracis, scutelli maculis duabus basalibus mediis, macula oblonga discoidali aliaque maxima utrimque laterali oblongo-obtriangulari, a basi ultra medium extensa, nec non dorso abdominis, nigris; ventre fusco; tegminibus a basi ultra medium pallide infuscato-nebulosis et griseo-sericeis, apicem versus vitreis, anastomosibus maculisque apicali et subapicali venarum longitudinalium fuscis; alis apicem versus levissime infuscatis, limbo sordide albido, medio levissime infuscato. ♂

Long. 23, exp. tegm. 68 mill.

India orient. (Mus. Brit.)

Quoad stâturam, latitudinem limbi apicalis tegminum alarumque et formam thoracis *P. subrufæ* affinis, fronte obtusiore, multo minus prominente, coloribus picturaque distinctissima. Vertex oculo transverso plus duplo latior, ocellis ab oculis quam inter se fere triplo longius remotis. Frons paullo plus quam tertiam partem faciei occupans. Thorax a basi longe ultra medium sensim dilatatus, dein rotundatus et subito angustatus. Costa modice dilatata, vena subcostali et costa per totam longitudinem contiguis. Area tegminum apicalis septima octava brevior. Limbus apicalis tegminum alarumque æqui-latus, illorum limbus impictus. Opercula latitudine maxima nonnihil longiora, flavo-grisea, basi infuscata.

Prasia, n. g.

Caput parvum, thoracis antico haud latius, vertice angusto; fronte compressa, valde prominente, basin versus angustata. Antennarum articulus primus elongatus. Thorax postice quam antice latior, margine antico utrimque leviter elevato, subrecto, limbo postico angusto, angulis basalibus retrorsum leviter productis. Tegmina vix marginata, areolis apicalibus octo, venis ulnaribus basi distantibus, anastomosibus duabus exterioribus opposite obliquis. Alæ angustissime marginatæ, areolis apicalibus sex.

Cystosomati affine genus.

1. *P. faticina.*—Pallidissime subolivaceo-flavescens; tegminibus alisque sordide hyalinis, illorum margine costali ultra medium albido; thorace antrorsum sensim angustato. ♀

Long. 28, exp. tegm. 80 mill.

Celebes. (Mus. Brit.)

Vertex oculo transverso nonnihil latior. Ocelli postici inter se et ab oculis æque longe distantes. Thorax ab apice retrorsum sensim ampliatus, postice quam antice circiter duplo latior, marginibus lateralibus, rugæ crassiusculæ instar, prominulis. Tegmina abdomine duplo longiora, areis apicalibus quarta, quinta, sexta et septima longissimis, tertia prima et octava nonnihil longiore, secunda omnium brevissima, area basali interna apice sat acuta. Femora antica subtus trispinosa, spina subapicali minutissima, subbasali nutante, reliquis majore.

2. *P. Hariola.*—Griseo-straminea; tegminibus alisque sordide hyalinis, illorum margine costali ultra medium albido; thorace utrimque distincte sinuato. ♀

Long. 21, exp. tegm. 60 mill.

Insula Mysol. (Coll. Stål.)

Præcedenti similis, minor, forma thoracis mox distinguenda. Vertex oculo transverso paullo latior. Ocelli postici inter se quam ad oculos paullo magis approximati. Thorax margine antico subelevato, lateribus obtusissimis, fere ab apice ad medium parallelis, dein postice subito ampliatis. Tegmina areolis apicalibus prima, tertia, quarta, quinta et sexta longissimis. Femora antica subtus apicem versus bispinosa (spina tertia subbasali læsa?).

Chlorocysta, Westw.

1. *C. macrula.*—Læte virescens; tegminibus alisque hyalinis, viridi-venosis, illis obsoletissime virescente-indutis; marginibus lateralibus thoracis fere ab apice ultra medium parallelis, basi ipsa ampliatis; abdomine leviter inflato. ♂

Long. 21, exp. tegm. 44 mill.

Moreton Bay. (Mus. Brit.)

C. vitripenni affinis, minor, thorace basi nec pone medium utrimque ampliato, abdomineque multo minus inflato distinctissima. Vertex oculo transverso paullo plus duplo latior, ocellis posticis inter se quam ad oculos paullo magis approximatis. Thorax antice capiti æquilatus, basi ipsa utrimque ampliatus. Tegmina areolis apicalibus undecim, ante illas areolis octo minoribus. Alæ areolis apicalibus quinque. Femora antica trispinosa.

Acrilla, n. g.

Caput parvum, thoracis antico paullo angustius, vertice angusto; fronte plus quam dimidium latitudinis faciei occupante, paullo prominente. Antennarum articulus primus brevis. Rostrum coxas intermedias haud superans. Thorax lateribus haud dilatatis. Tegmina non nisi apice angustissime marginata, abdominis apicem haud superantia, venis ulnaribus basi distantibus, areolis apicalibus undecim, areola discoidali venas longitudinales sex postice emittente. Alæ anguste marginatæ, areolis apicalibus septem. Abdomen maris valde inflatum, tympanis detectis, operculis minutis brevissimis. Pedes mediocres, femoribus anticis incrassatis, trispinosis.

Chlorocystæ affine genus.

1. *A. adipata.*—Pallide sordide straminea; tegminibus alisque sordide hyalinis, stramineo-venosis. ♂

Long. 32, exp. tegm. 60 mill.

Insula Mysol. (Coll. W. W. Saunders.)

Vertex oculo transverso vix duplo latior, ocellis posticis inter se et ab oculis æque longe remotis. Thorax lateribus obtusissimis, medio et apice æque latus, ante medium utrimque levissime rotundatus, postice subito ampliatus, impressionibus sat profundis, limbo postico angusto. Tegmina costa venaque subcostali contiguis, illa haud dilatata; areola basali interiore versus medium levissime ampliata; areolis apicalibus prima, sexta, septima, octava et nona valde elongatis.

Gæana, Am. et Serv.

1. *G. Sibylla.*—Nigra; tegminibus a basi vix ad medium subolivaceo-flavis; alis ultra medium lutescentibus. ♂

Long. 42, exp. tegm. 112 mill.

Tringany. (Mus. Brit.)

Statura *G. maculatæ*. Frons valde tumida. Thorax antice capite nonnihil angustior, lateribus ab apice ad medium parallelis, dein subito ampliatis. Tegmina costa et vena subcostali per totam longitudinem sat distantibus, venis ulnaribus basi sat distantibus, areis apicalibus longissimis, prima, quarta et sexta æquilongis. Opercula subtriangularia, apice rotundata.

Hotinus, Am. et Serv.

1. *H. cœlestinus.*—Dilute viridi-olivaceus, ventre pedibusque nigro-fuscis; capite obscure fusco-testaceo; tegminibus pallide sordide alliaceis, fasciis tribus nigricantibus, virescente-venosis, prima prope basin posita lata, vix nisi in clavo distinguenda, secunda paullo ante medium posita angusta, medio angustissima, tertia lata, ipsa maculis tribus olivaceis pallide virescentibus ornata, parte apicali pone hanc fasciam griseo-albida, maculis olivaceis pallido-cinctis adspersa, areolis apicalibus disco fuscis; alis pulcherrime azureis, parte apicali nigra. ♀

Long. 41, exp. tegm. 90 mill.

Cambodia. (Coll. Stål.)

Species coloribus picturaque maxime insignis, *H. ducali* affinis, processu capitis longiore, fusco-testaceo, valde curvato, ab illo et congenericis distinctissima. Caput a basi apicem versus sensim compresso-angustatum, corpore paullo longius, superne ante medium haud impressum.

2. *H. ducalis.*—Testaceus; pedibus obscurioribus, tibiis, tarsis, antennis, nec non ventre nigricantibus; tegminibus sordide virescente-albidis, apicem versus nigro-fuscis, virescente-venosis, maculis nonnullis ante medium seriebus tribus transversis dispositis, fascia lata pone medium, maculis nonnullis parvis, albido-cinctis, pone illam fasciam positis, viridi-venosis, parte apicali guttulis albidis parce adspersa; alis albido-viridibus, parte apicali nigra; capitis cornu longissimo, usque ad apicem sensim compresso-angustato, modice curvato. ♂ ♀

Long. 42—46, exp. tegm. 80—94 mill.

Cambodia. (Mus. Brit. et Coll. Stål.)

H. candelario statura similis, protuberantia capitis longiore, a latere visa latiore, carinis frontalibus distinctioribus.

ALCATHOUS, n. g.

Caput thorace multo angustius, protuberans, fronte prope apicem nonnihil rotundato-ampliata, dein sursum distincte angustata, tricarinata; clypeo carina media instructo. Rostrum apicem abdominis subattingens. Antennæ breves, articulo secundo brevissime subcylindrico, apice oblique truncato. Thorax medio unicarinatus, antice medio nonnihil productus, parte producta truncata, margine postico recto. Scutellum tricarinatum, thorace duplo longius. Tegmina apicem versus nonnihil ampliata, apice oblique obtuse rotundata, venis longitudinalibus raro furcatis, interiore simplici, parte tantum tertia apicali venulis transversis remotis, irregulariter anastomosantibus, instructa. Alæ parte plus quam dimidia basali venulis transversis destitutæ. Pedes mediocres, femoribus anterioribus subtus leviter dilatatis, tibiis posticis quinque- vel sex-spinosis.

Hotino affine genus.

1. *A. fecialis.*—Lividus, dorso abdominis alisque coccineis exceptis, minute fusco-conspersus, hic illic infuscatus; tegminibus fusco-nebulosis, horum maculis parvis costalibus, alarum apice, limbo lato postico, maculisque nonnullis prope aream analem, maculis dorsi abdominis in seriebus duabus dispositis, annulisque tibiarum nigricantibus; femoribus fuscescentibus, obscurius irroratis, pallido-fasciatis. ♀

Long. 15, exp. tegm. 32 mill.

India orient. bor. (Mus. Brit.)

Caput thorace scutelloque ad unum paullo brevius, parte producta nonnihil ante oculos subsubito angustata et compressa, ante medium transversim impressa et nonnihil reflexa; vertice basi oculo transverso plus duplo latiore, parte dimidia basali triangulari, parte apicali angustissima; fronte infra medium plana, carinis tribus parallelis instructa, carina media medio interrupta. Venulæ transversæ tegminum subrufescentes.

HARIOLA, n. g.

Caput thorace multo angustius, ante oculos valde productum, vertice basi sinuato, fronte carinis destituta, prope apicem utrimque nonnihil ampliata, dein sursum angustata; clypeo carinis

destituto. Rostrum vix pone medium ventris productum. Antennæ brevissimæ, articulo secundo subgloboso. Thorax antice pone verticem rotundato-prominens, medio carinatus, margine basali vix sinuato. Scutellum thorace fere dimidio longius, tricarinatum. Tegmina apicem versus sensim leviter ampliata, apice rotundata, venis longitudinalibus parce furcatis, venulis transversis remotis, per tota tegmina sparsis. Alæ, parte basali excepta, venulis remotis instructæ. Pedes mediocres, simplices, tibiis posticis sex-spinosis.

Alcathoo affine genus, fronte ecarinata, forma articuli secundi antennarum, ut et distributione venularum tegminum distinctum.

1. *H. tiarata.*—Livida; fronte dilute, clypeo obscurius infuscatis, illius angulis apicalibus albidis; fasciis pedum anteriorum femorumque posticorum nec non articulo apicali tarsorum nigro-fuscis; tegminibus a basi fere ultra medium dilute ferrugineis, opacis, parte ferruginea apice profunde sinuata, ad costam et in clavo parce fusco-maculata, parte dimidia fere apicali alisque vitreis, illa apicem versus maculis fuscis conspersa, his basi ipsa sordide flavescentibus; abdomine dorso rufescente, segmentis apice anguste fusco-limbatis, subtus parce nigro-consperso, limbis lateralibus latis parteque apicali nigris. ♀

Long. 15, exp. tegm. 34 mill.

Amboina. (Coll. W. W. Saunders.)

Caput thorace vix dimidio angustius, scutello æquilongum, parte producta ultra medium leviter dein magis angustata, ad medium horizontali, dein sursum flexa; vertice basi oculo transverso duplo latiore, ad medium leviter dein ante medium subito maxime angustato, angulis posticis retrorsum et leviter sursum prominulis; fronte sursum ultra medium parum dein magis angustata, infra medium planiuscula, dein antrorsum producta, longius superiora versus reclinata, apice supra clypeum transversim leviter depressa. Thorax latera versus macula parva nigra notatus.

Ulasia, n. g.

Caput thorace multo angustius, protuberans, parte producta paullo ante oculos subito valde compresso-angustata, plus minus sursum vergente; vertice transversim excavato, marginibus lateralibus, præsertim postice, dilatatis et elevatis; fronte prope apicem nonnihil rotundato-ampliata, dein sursum sensim distincte

angustata, carinis tribus parallelis instructa ; clypeo fronte angustiore, medio carinato. Antennæ breves, articulo secundo transverso, ab insertione sursum producto. Rostrum ventris medium haud superans. Thorax antice pone verticem angulato-productus, unicarinatus, margine postico vix vel levissime sinuato. Scutellum tricarinatum, thorace duplo longius. Tegmina apicem versus subampliata, apice oblique obtuse rotundata, pone medium venulis transversis remotis numerosis, ante medium venulis nullis vel raris instructa. Alæ, parte vix dimidia basali excepta, venulis transversis instructæ. Pedes mediocres, simplices, tibiis posticis normaliter quinque-spinosis, spina basali superna destitutis.

Aphanæ affine genus.

1. *U. Saundersi.*—Olivaceo-fuscescens, cornu capitis erecto ; tegminibus subdilute flavo- vel virescente-olivaceis, apicem versus pallidioribus, maculis magnitudine variabilibus fuscis conspersis ; alis vitreis, interdum dilute vinaceis, parte circiter quarta basali crocea, limbo postico et apicali pallide fuscescente ; abdomine sanguineo, dorso seriebus duabus macularum nigrarum ornato ; genitalibus nigris ; pedibus obscure fusco-annulatis. ♀

Long. 14, exp. tegm. 36 mill.

Insula Aru. (Mus. Brit.) Ins. Waigiu. (Coll. W. W. Saunders.)

Vertex basi oculo transverso nonnihil latior, antrorsum nonnihil angustatus ; cornu erecto, a latere viso medio subdilatato, apice acuminato. Tegmina pone medium prope marginem costalem macula oblique transversa pallide sordide flavescente, interdum minus distincta, ornata. Femora postica interdum in sanguineum vergentia.

2. *U. magica.*—Minus obscure fusco-olivacea ; tegminibus sordide flavo-olivaceis, fusco-nebulosis ; alis vitreis, fusco-venosis, parte circiter quarta basali crocea ; abdomine dorso sanguineo, segmentis duobus ultimis latera versus macula nigra notatis, subtus fusco-sanguineo ; parte apicali femorum, tibiis tarsisque fuscis, pallido-maculatis ; cornu capitis oblique sursum et antrorsum producto. ♂

Long. 14, exp. tegm. 32 mill.

Insula Mysol. (Mus. Brit.)

U. Saundersi valde affinis, capitis cornu longiore, scutello thoraceque ad unum nonnihil breviore, nec scutello solo subbreviore,

antrorsum nutante, vertice nonnihil longiore et postice paullo angustiore distincta.

Belbina, n. g.

Caput thorace angustius, sat longe protuberans, marginibus lateralibus verticis leviter elevatis, posterius subdilatatis; fronte sursum sensim angustata, carinis duabus obsoletis instructa; clypeo ecarinato. Antennæ breves, articulo secundo breviter subcylindrico. Thorax medio alte carinatus, antice pone verticem obtuse productus, disco bi-impressus, margine postico latissime sinuato. Scutellum thorace dimidio longius. Tegmina apicem versus nonnihil ampliata, venulis transversis ante medium rarissimis, apicem versus numerosioribus, inter se haud anastomosantibus. Pedes simplices, tibiis posticis sex-spinosis.

Aphanæ affine genus, ad quod pertinet *Enchophora sicca*, Walk.

Aphana, Guér.

1. *A. Thetis.*—Subdilute sordide sanguinea; vertice oculo transverso plus duplo latiore, utrimque latera versus ruga longitudinali instructo, marginibus lateralibus reflexis et leviter elevatis, margine antico versus medium valde reflexo; fronte latitudine nonnihil longiore, lateribus supra medium parallelis, infra medium leviter ampliatis, hic tamen etiam parallelis et levissime sinuatis, minus distincte vermiculato-rugosa, areis basin versus distinctis, æquilongis, supra medium oculorum conjunctim subito angustatis, media truncata, superiora versus leviter angustata; e plica inter frontem et apicem emittitur corniculum parvum cylindricum reflexum, verticis longitudinem haud superans; thorace medio ruga lineari longitudinali leviter elevata instructo, antice pone verticem truncato, pone oculos obtuse sinuato; tegminibus partibus circiter duabus quintis apicalibus dense reticulatis, apicem versus sensim ampliatis, apice oblique rotundatis; tibiis posticis quadri-spinosis, præterea basi superne spina brevi armatis; tegminum alarumque parte apicali griseo-testacea, harum limbo postico sordide albido.

Var. *sanguiflua.*—Tegminibus sordide, alis purius sanguineis, illorum parte sanguinea apice bis obtuse angulato-producta, inter angulos obtuse sinuata; alarum parte apicali albido-farinosa. ♀

Long. 22, exp. tegm. 71 mill.

Celebes, Menado. (Coll. W. W. Saunders.)

Var. *arcuigera.*—Tegminibus ultra medium fusco-virescentibus, ante medium maculis nonnullis indeterminatis et medio fascia

irregulari flavescente-testaceis ornatis, hac fascia fusco-viridi-guttata, parte tegminis fusco-viridi apice fascia abbreviata arcuata nigra terminata; alis dilutius fusco-virescentibus, lætius transversim viridi-venosis, area anali intus sanguinea. ♀

Long. 20, exp. tegm. 65 mill.

Makassar. (Coll. W. W. Saunders.)

2. *A. Daphne.*—Testacea, in sanguineum vergens; tegminibus alisque ultra medium fusco-virescentibus, illorum fascia abbreviata media sordide straminea, parte fusco-virescente apice latissime sinuata, ibidem fascia angusta, abbreviata, nigricante terminata, partibus duabus quintis apicalibus fuscis, pallido-venosis; alarum parte apicali fuscescente-testacea, limbo postico parteque interiore areæ analis sordide albidis. ♀

Long. 21, exp. tegm. 66 mill.

Menado. (Coll. W. W. Saunders.)

Præcedenti affinis; coloribus exceptis, parvam differentiam detegere potui; corniculo capitis breviore, marginem anticum reflexum verticis vix superante, thorace retrorsum nonnihil minus ampliato, tegminibus proportionaliter latioribus, horumque parte basali colorata apice per totam latitudinem late sinuata, nec medio tantum sinuata, nec ad extremitates sinus angulato-productis differt.

Birdantis, n. g.

Caput latum, thorace nonnihil angustius, haud protuberans; vertice transverso, basi apiceque late sinuato; fronte apice utrimque nonnihil ampliata, dein leviter angustata, basi leviter reclinata, latitudine haud longiore, vertice haud vel vix altiore, carinis distinctis destituta; clypeo ecarinato. Rostrum apicem abdominis haud attingens. Antennæ breves, articulo secundo transverso. Thorax antice pone verticem leviter rotundato-productus, obtuse unicarinatus, margine basali distincte late sinuato. Scutellum thorace plus duplo longius, tricarinatum. Tegmina subangusta, tota venulis transversis remotis instructa. Alæ, basi excepta, transversim venosæ. Pedes mediocres, simplices, tibiis posticis normaliter sex-spinosis, basi ipsa inermibus.

Aphanæ affine genus, capite lato, fronte breviore, tegminibus totis transversim venosis præsertim distinctum.

1. *B. decens.*—Pallide olivaceo-flavescens; vittis quinque frontis, nec basin nec apicem attingentibus, thoracis maculis

duabus parvis lateralibus fasciolisque duabus, una inter carinas laterales, altera infra carinam inferiorem, nigris; tegminibus a basi ad medium ferrugineis, parte hac ferruginea apice profunde sinuata et apicem versus fusco-guttulata, parte apicali vitrea, apicem versus fusco-guttulata, limbo costali flavo-olivaceo, pone medium fusco-maculato; alis vitreis, basi sanguineis; abdomine dorso nigro, sanguineo-fasciato; annulo medio apiceque tibiarum anteriorum tarsisque anterioribus nigricantibus. ♂

Long. 14, exp. tegm. 39 mill.

Insulæ Aru. (Mus. Brit.)

Poecoceras quasdam, apice tegminum vitreo instructas, simulans. Vertex oculo transverso fere duplo latior. Frons sursum sensim leviter angustata, sat dense aciculata, parce punctulata, parte basali reflexa angulum obtusum formante, ad carinam obtusam transversam verticis producta.

2. *B. delibuta.* — Pallide testaceo-flavescens; vittula laterali clypei, vittis tribus frontis, nonnihil supra medium abbreviatis, limboque basali, nigro-fuscis; clypeo medio vittis duabus approximatis, dilute brunnescentibns; tegminibus flavo-ferrugineo-pellucidis, ferrugineo-venosis, limbo costali in olivaceum vergente; alis vitreis, basi pallide sanguineis.

Exp. tegm. 37 mill.

Insula Ternate. (Coll. Stål.)

B. decenti valde affinis; fronte disco subtiliter rugulosa, marginibus lateralibus supra medium parallelis, parte basali reflexa late rotundata, pone marginem anticum verticis haud producta. Tegminum apice et abdomine exempli descripti mutilatis.

Gebenna, n. g.

Caput latiusculum, thorace angustius, haud protuberans; vertice transverso, margine antico recto, postico late sinuato; fronte subquadrata, ad clypeum utrimque nonnihil ampliata, area media sursum ampliata, apice late subtruncata, ante verticis marginem apicalem prominula, haud reflexa; clypeo ecarinato. Antennæ articulo secundo transverso, ab insertione sursum producto. Thorax medio unicarinatus, apice pone verticem rotundato-productus. Scutellum thorace circiter dimidio longius. Tegmina apicem versus vix ampliata, apice rotundata, margine costali recto, venis longitudinalibus raro furcatis, venulis transversis per tota tegmina remote sparsis. Alæ pone medium remote transversim venosæ.

Pedes simplices, tibiis posticis quadrispinosis, basi ipsa nec spinosis nec tuberculatis.

Aphancæ affine genus.

1. *G. Sylvia.*—Pallide griseo-flavescens; fronte, vertice, thoracis scutellique disco minute nigro-irroratis; thorace scutelloque utrimque maculis parvis nigris conspersis; tegminibus a basi ultra medium dilute rufescente-ferrugineis, remote nigro-conspersis, limbo costali pallide olivaceo-virescente, parte apicali vitrea, fusco-conspersa et maculata; alis vitreis, basin versus pallide virescentibus, maculis tribus magnis irregularibus subconfluentibus nigro-fuscis ante medium ornatis; abdomine dorso nigro, segmentis apice olivaceo-marginatis, seriebus quattuor longitudinalibus macularum irregularium griseo-flavescentium ornato; ventris segmentis utrimque nigro-maculatis, basi interrupte nigro-fasciatis; pedibus nigro-multifasciatis. ♀

Long. 13, exp. tegm. 39 mill.

India orientalis. (Mus. Brit.)

Vertex oculo transverso fere ter latior, marginibus nonnihil elevatis. Frons remote subtiliter rugulosa, sursum leviter angustata. Thorax minus distincte rugulosus. Scutellum disco subtiliter rugulosum.

ACARNA, n. g.

Caput ante oculos plus minus prominens vel productum, thorace angustius; fronte prope apicem angulato-ampliata, dein angustata; clypeo triangulari, marginibus obtusis. Articulus apicalis rostri brevissimus. Ocelli distincti. Antennæ breves, articulo secundo brevissime cylindrico. Thorax basi subtruncatus, antice medio productus, carinis duabus divergentibus, postice abbreviatis, distinctioribus, et una media obsoleta instructus. Scutellum triangulare. Tegmina vitrea vel pellucida, elongata, clavo apice acuto, venis duabus longitudinalibus pone medium in unam conjunctis; corio venis tribus longitudinalibus longe a basi furcatis, ex areola basali emissis, vena interiore ad suturam clavi valde approximata, venulis transversis partis apicalis numero variabilibus. Pedes longiusculi, graciles, tibiis anticis leviter dilatatis, posticis pone medium trispinosis.

Pseudophancæ affine genus, structura capitis thoracis pedumque distinctissimum.

I. *Capite protuberante; clavo venulis transversis nonnullis instructo.*

1. *A. rostrifera.*—Sordide flavescente-albida; vittis uabus signaturaque anchoriformi clypei, processu capitis superne, thoracis vittulis duabus dorsalibus mediis, una utrimque marginali, maculisque duabus minutis partis lateralis deflexæ, corii macula pone apicem clavi, fascia curvata prope apicem, apice, linea transversa subapicali nec non clavi margine commissurali, apice alarum, fascia subapicali femorum anteriorum, fuscia lata ante medium, parteque apicali tibiarum anteriorum, fuscis aut nigro-fuscis. ♂

Long. 12, exp. tegm. 31 mill.

Insula Mysol. (Coll. W. W. Saunders.)

Caput ante oculos longe protuberans, thorace scutelloque ad unum nonnihil longius, protuberantia tetragona, apice subgloboso-incrassata, et hic carinis destituta; vertice basi carinula obsoleta instructo; fronte carinis tribus, versus apicem protuberantiæ evanescentibus, instructa, carinis lateralibus undulatis. Corium venis longitudinalibus, præsertim vena prima, sat longe ante medium furcatis, parte vix dimidia apicali venulis transversis remotis instructa; pterostigmate venulis oblique transversis circiter sex instructo.

II. *Capite haud protuberante, ante oculos paullo prominente.*

A. *Tegminibus vitreis; pterostigmate venulis transversis sex vel octo instructo.*

a. *Clavo venulis transversis destituto.*

2. *A. notaticollis.*—Testaceo-albida, carinis lateralibus frontis, marginibus verticis, lateribusque scutelli rufescente-indutis; maculis duabus basalibus vel fascia basali frontis, macula utrimque marginali maculisque parvis mediis thoracis nigris; tegminum apice nebulaque oblonga interiore prope apicem fuscescentibus, macula orbiculari subapicali nigro-fusca. ♂

Long. 10, exp. tegm. 31 mill.

Insula Batschian. (Coll. W. W. Saunders.)

Vertex subquadratus, apice leviter rotundatus, oculo transverso distincte latior. Frons latitudine maxima nonnihil longior, lateribus supra medium subparallelis, carinis sat distinctis, lateralibus basin versus convergentibus, basin haud attingentibus. Tegmina ultra medium sensim levissime ampliata, dein apicem versus leviter angustata, venulis transversis partis apicalis minus numerosis. Femora postica extus fusco-vittata.

b. *Clavo postice venulis transversis duabus vel una instructo.*

3. *A. conviva.*—Testaceo-albida; clypei lineis tribus longitudinalibus, frontis basi, carinis, macula in anguliis lateralibus serieque laterali granulorum parum elevatorum, verticis fascia angusta subapicali intramarginali maculisque duabus posticis, thoracis maculis parvis circiter octo dorsalibus et una in parte deflexa laterali, hujus etiam fascia ad carinam superiorem, scutelli maculis tribus lateralibus in seriem obliquam dispositis, fasciis abdominis angustis, laminaque superiore genitalium nigricantibus; tegminum annulo communi pone clavi apicem nec non apice fuscis, parte apicali fusca, apice dilutiore; marginibus frontis testaceis; tibiis anterioribus leviter infuscatis, basi et medio pallidioribus. ♂

Long. 9, exp. tegm. 28 mill.

Insula Mysol. (Coll. W. W. Saunders.)

4. *A. ustulata.*—Testaceo-albida; clypei lineis tribus longitudinalibus, frontis seriebus duabus granulorum, verticis maculis quattuor (4.4) parvis, anterioribus minoribus, thoracis maculis circiter octo dorsalibus et duabus in parte laterali deflexa, scutelli maculis parvis lateralibus tribus, genitalibusque nigricantibus; corio apice fusco, pterostigmate testaceo-flavescente; tibiis anterioribus leviter infuscatis, medio pallidioribus. ♂

Long. 9, exp. tegm. 28 mill.

Insula Aru. (Mus. Brit.)

Præcedenti maxime affinis, an ejus varietas? Quoad formam tegminum ad *A. rostriferam* appropinquat. Vertex oculo transverso nonnihil angustior, latitudine vix brevior. Frons supra medium sursum sensim leviter angustata. Tegmina ultra medium sensim leviter ampliata, dein apicem versus leviter angustata.

B. *Tegminibus vitreis, pterostigmate nullo.*

5. *A. orba.*—Testaceo-albida; fascia basali frontis, macula parva media alteraque utrimque marginali thoracis nigris; tegminibus limbo apicali et interiore pone clavum infuscatis, macula subapicali nigro-fusca.

Long. 8, exp. tegm. 23 mill.

Insula Mysol. (Coll. W. W. Saunders.)

A. notaticolli similis. Vertex latitudine nonnihil longior, oculo transverso vix latior. Frons a medio sursum distincte angustata,

latitudine maxima nonnihil longior. Tegmina ultra medium levissime ampliata, dein apicem versus leviter angustata, apice rotundata, venulis transversis partis apicalis minus numerosis. Femora postica extus ante medium infuscata.

C. *Tegminibus coloratis, pellucidis, clavo venulis transversis compluribus instructo.*

6. *A. pupillata.*—Pallide sordide sanguinea, pedibus tegminibusque obscurioribus, his apicem versus fusco-luridis, fascia pallida ibidem instructis, macula subapicali nigra, ipsa macula minuta albida notata, ante maculam illam nigram linea transversa arcuata fusca ornatis; alis infuscatis, apice obscurioribus. ♂

Long. 15, exp. tegm. 44 mill.

Dory, Nova Guinea. (Mus. Brit.)

Caput ante oculos nonnihil prominens, vertice oculo transverso plus duplo latiore, latitudine nonnihil breviore, apice rotundato; fronte latitudini maximæ æquilonga, supra medium sursum levissime angustata, carinis tribus distinctis, lateralibus basin versus convergentibus, basin haud attingentibus. Tegmina apicem versus sensim levissime ampliata, apice rotundata, costa duplicata, spatio angustissimo inter costam et venam intracostalem venulis transversis obsoletis instructo, venulis transversis partis apicalis numerosissimis.

Hemisphærius, Schaum.

I. *Vertice oculo subæquilato.*

1. *H. circumcinctus.*—Latissime ovalis, subrotundatus, griseo-stramineus, superne in pallide-olivaceum vergens; tegminum limbo laterali vittaque arcuata prope limbum et cum hoc parallela, fronte, excepta parte apicali purius straminea, clypeoque castaneis; tegminum vitta, inter limbum lateralem et vittam castaneam, straminea; coxis anterioribus, basi apiceque exceptis, nec non apice spinarum tibiarum posticarum nigris; fronte latitudine distincte nonnihil longiore, rugulosa, fere tota plana. ♀

Long. 5 mill.

Insula Mysol. (Coll. W. W. Saunders.)

2. *H. vittiger.*—Rotundatus, niger; fascia apicali frontis, vertice, thorace, vitta scutelli, tegminum vitta prope commissuram posterius abbreviata vittaque prope marginem lateralem

pallide stramineis ; pedibus fasciisque ventris pallide testaceo-flavescentibus, spinis tibiarum posticarum nigris ; fronte strigulosa, infra medium plana, supra medium convexo-reclinata, latitudine maxima vix longiore. ♂

Long. 4 mill.

Insula Ke. (Coll. W. W. Saunders.)

3. *H. tæniatus.*—Rotundatus, pallidissime subcastaneus, subtus cum pedibus griseo-stramineus ; frontis fascia apicali, vertice, thorace, vitta scutelli, vittis duabus tegminum, postice conjunctis, una prope commissuram, altera prope marginem lateralem et cum hoc parallela, pallide virescentibus ; clypeo, maculis basali et apicali femorum anteriorum, nec non spinis tibiarum posticarum nigris ; fronte longitrorsum convexiuscula, latitudine vix longiore. ♂

Long. 4 mill.

Insula Waigiu. (Coll. W. W. Saunders.)

4. *H. signatus.*—Pallidissime olivaceo-virescens, clypeo, maculis basali et apicali femorum anteriorum, femoribus posticis, apice spinarum basique tibiarum posticarum, nec non annulo magno, intus aperto, utriusque tegminis nigris ; fronte læviuscula, convexiuscula, latitudini æquilonga. ♂

Long. 5 mill.

Insula Batschian. (Coll. W. W. Saunders.)

5. *H. tristis.*—Rotundatus, supra cum capite niger ; subtus cum pedibus posticis griseo-stramineus, pedibus anterioribus dilute sanguineis ; fronte aciculata, latitudini subæquilonga, hujus fascia apicali, vertice thoraceque stramineis. ♂

Long. 5 mill.

Insula Batschian. (Coll. W. W. Saunders.)

6. *H. fasciatus.*—Latiuscule ovalis, pallide subolivaceo-stramineus, frontis medio infuscato ; clypeo, fasciis duabus tegminum extus abbreviatis, femoribus posticis, fasciisque ventris nigro-castaneis ; fronte latitudine distincte longiore, subtiliter rugulosa. ♀

Long. 4 mill.

Insula Mysol. (Coll. W. W. Saunders.)

7. *H. pullatus.*—Supra cum capite niger, subtus cum pedibus flavo-testaceus ; frontis fascia apicali, vertice, thorace, vitta

scutelli, tegminum lineis duabus posterius abbreviatis, una prope commissuram, altera prope marginem costalem et basin versus ad hunc valde approximata, pallide stramineis; fronte subtiliter rugulosa, latitudini æquilonga. ♂

Long. 5 mill.

Insula Ceram. (Coll. Stål.)

8. *H. latipes.*—Late ovalis, dilute testaceo-flavescens; femoribus anterioribus subtus dilatatis, horum macula in parte dilatata, tibiis anterioribus superne, spinis tibiarum posticarum, macula parva angulorum lateralium frontis, tegminibusque nigris, horum limbo costali lato ante medium flavo-testaceo; fronte convexiuscula, latitudine sublongiore. ♀

Long. 4⅓ mill.

Insula Ceram. (Coll. Stål.)

II. *Vertice oculo transverso distincte angustiori.*

9. *H. villicus.*—Latissime ovalis, dilute castaneus; vertice, vitta thoracis scutellique, vittis tegminum duabus angustis, postice conjunctis, una commissurali, altera ab angulo humerali, prope marginem costalem currente et ab hac sensim divergente, nec non vittula discoidali, flavis; fronte convexiuscula, latitudine nonnihil longiore, hujus macula magna discoidali apicem attingente, clypeo, maculis interioribus basali et apicali femorum anteriorum, femoribus posticis, carina exteriore tibiarum anteriorum, apiceque spinarum tibiarum posticarum, nigris. ♂

Long. 4½ mill.

Insula Mysol. (Coll. W. W. Saunders.)

10. *H. pulcherrimus.*—Late ovalis, niger, subtus cum pedibus griseo-stramineus; femoribus anterioribus marginibusque angustis lateralibus frontis nec non thorace dilute sanguineis; clypei limbo basali, frontis limbis basali et apicali, nec non vitta laterali intramarginali prope apicem abbreviata, vertice, vitta scutelli, tegminum vitta prope marginem costalem vittaque commissurali, postice conjunctis, dilute flavescentibus; tegminum disco rotundato communi pallide castaneo; fronte latitudine paullo longiore, subtiliter aciculata, convexiuscula. ♂

Long. 4 mill.

Insula Batschian. (Coll. W. W. Saunders.)

11. *H. viduus.*—Latissime ovalis, fusco-castaneus, fronte supra medium pallidiore; subtus cum pedibus griseo-stramineus; linea femorum anteriorum, femoribus posticis, carina tibiarum anteriorum apiceque spinarum tibiarum posticarum nigris; tegminibus limbo costali, posterius latiore, sordide stramineo; fronte lævi, nitida, latitudini subæquilonga. ♂

Long. 3 mill.

Insula Mysol. (Coll. W. W. Saunders.)

BARDUNIA, n. g.

Corpus ovatum, depressum. Caput thorace nonnihil angustius, fronte tota breviter cylindrico-producta; vertice basi leviter sinuato; clypeo ecarinato, sat convexo. Thorax basi truncatus, antice pone verticem rotundato-productus, haud carinatus. Scutellum thorace plus dimidio longius, ecarinatum. Tegmina coriacea, oblonga, convexa, venis longitudinalibus furcatis et ramulos longitudinales emittentibus, venulis transversis nullis; clavo tegmine dimidio haud longiore, apice acuto, venis duabus, pone medium in unam conjunctis, instructo. Alæ tegminibus latiores, apicem versus dilatatæ, irregulariter reticulatæ, profunde fissæ. Pedes longi, femoribus anterioribus subtus apicem versus sensim nonnihil dilatatis, tibiis paullo brevioribus; tibiis posticis trispinosis, spina una prope basin, reliquis duabus pone medium positis; tarsis posticis articulo primo apicalibus duobus ad unum paullo breviore.

Flavinæ affine genus, structura singulari capitis, tibiisque posticis trispinosis præsertim diversum.

1. *B. nasuta.*—Sordide straminea, fusco-conspersa, granulata; clypeo fere toto, apice vittisque duabus angustis marginalibus frontis, dorso abdominis apiceque femorum anteriorum nigricantibus; tegminibus pallide testaceo-venosis, areis nigro-conspersis et lineolatis; vertice latitudine vix breviore, oculo transverso nonnihil angustiore. ♀

Long. 7, exp. tegm. 15 mill.

Insula Batschian. (Coll. W. W. Saunders.)

CORETHRURA, Hope.

1. *C. funebris.*—Obscure fusco-testacea, fronte dilutiore; tegminibus prope apicem macula parva nigra, ipsa macula minuta albido-mucorea notata, pone medium fascia albido-mucorea; alis fuscescentibus, apicem versus obscurioribus;

abdomine pallide virescente, subtus fuscescente, viridi-fasciato, apice albo-mucoreo; pedibus anterioribus valde dilatatis, testaceo-fasciatis. ♂

Long. 9, exp. tegm. 23 mill.

Tondano. (Coll. W. W. Saunders.)

Caput ante oculos nonnihil prominens, vertice latitudine nonnihil longiore, antrorsum angustato, apice rotundato, marginibus lateralibus nonnihil elevatis; fronte ecarinata, intra margines laterales leviter impressa, prope apicem utrimque leviter rotundato-ampliata, dein sursum sensim angustata, latitudine maxima duplo longiore, marginibus lateralibus pilis brevibus ciliatis. Thorax et scutellum tricarinata. Tegmina breviter ciliata, apice medio nonnihil producta. Tibiæ posticæ trispinosæ.

TARUNDIA, Stål.

1. *T. villica*.—Nigricans; abdominis plaga laterali pedibusque lividis, femoribus infuscatis; tegminibus nigro-fuscis, ad costam obscurioribus, corii macula magna sub-obovata basali aliaque parva pone illam flavescentibus, macula discoidali sub-orbiculari, ad costam quam ad clavum magis approximata, maculaque minore versus angulum apicalem exteriorem vitreis, decoloribus; alis sordide hyalinis, fascia obsoleta pone medium limboque apicali fuscescentibus. ♀

Long. 6, exp. tegm. 20 mill.

Insulæ Aru. (Coll. W. W. Saunders.)

Frons tricarinata, lateribus subparallelis, apice rotundatis. Tegmina seriebus tribus venularum transversarum instructa, serie anteriori irregulari; margine apicali late rotundato, sutura clavi nonnihil breviore.

2. *T. concinna*.—Pallidissime testaceo-flavescens; tegminibus alisque vitreis, illorum fascia obliqua subbasali, ad marginem costalem retrorsum ultra medium producta, fasciola media, a commissura ad medium tegminis continuata, nec non fascia lata prope apicem nigro-fuscis, limbo apicali leviter infuscato, macula marginis costalis pone medium basique flavescente-albidis, macula costali prope apicem sordide flavo-testaceo; alarum limbo lato infuscato. ♀

Long. 6, exp. tegm. 20 mill.

Insulæ Aru. (Coll. W. W. Saunders.)

Frons tricarinata, supra medium subangustata. Tegmina apicem versus serie regulari, prope hanc serie irregulari incompleta,

ante illas serie tertia valde abbreviata venularum transversarum instructa, margine apicali latissime rotundato, suturæ clavi subæquilongo.

Ricania, Germ.

1. *R. luctuosa.*—Nigricans, pedibus dilute testaceo-flavis, femoribus intus nigro-fuscis; tegminum macula discoidali livida, pellucida, limbo apicali toto et costali apicem versus dilute fuscis; alis fuscis. ♂

Long. 7, exp. tegm. 19 mill.

Menado. (Coll. W. W. Saunders.)

Frons supra medium leviter, infra medium magis angustata, carina apicem versus marginibusque lateralibus flavo-testaceis. Tegmina seriebus quattuor venularum transversarum, serie anteriore valde curvata, postica regulari, continua; margine costali a basi ultra medium margineque apicali toto late rotundatis, hoc sutura clavi distincte breviore.

Nephesa, Am. et Serv.

1. *N. bis-triguttata.*—Subsordide pallide flavo-virescens; tegminibus maculis minutis albo-mucoreis parce adspersis, maculisque tribus parvis remotis sanguineis, in seriem longitudinalem mediam dispositis, ornatis; alis albis. ♂

Long. 9, exp. tegm. 28 mill.

Insulæ Aru. (Coll. W. W. Saunders.)

Frons infra medium sensim subrotundato-angustata, unicarinata, basi valde tumido-prominens. Thorax haud carinatus. Tegmina apicem versus sensim ampliata, apice late truncata, venis parce furcatis, venulis transversis raris, irregulariter sparsis, angulo apicali imo exteriore rotundato, angulo apicali commissurali acuto, sursum producto.

2. *N. guttulata.*—Sordide straminea vel stramineo-albida; tegminibus maculis minutissimis remotis sparsis, macula discoidali majore aliaque parva nonnihil ante illam sanguineis vel lutescentibus ornatis, limbo apicali infuscato, lineola marginis commissuralis nigro-fusca. ♂

Long. 9, exp. tegm. 33 mill.

Insulæ Batschian. (Coll. W. W. Saunders.)

Frons tricarinata, latitudine nonnihil longior, infra medium rotundato-angustata, basi nonnihil prominens. Thorax medio obsolete carinatus. Tegmina parce venosa, apice subrotundato-truncata, angulo apicali externo recto, interno sub-obtuso.

3. *N. gemmifera.*—Albida; tegminibus apice fusco-limbatis, maculis raris, remotis, minutis, sanguineis conspersis, maculis duabus discoidalibus reliquis majoribus, lineola media marginis commissuralis nigro-fusca. ♂

Long. 5½, exp. tegm. 18 mill.

Insula Batschian. (Coll. W. W. Saunders.)

Frons latitudine nonnihil longior, utrimque nonnihil rotundata, tricarinata. Thorax obsolete unicarinatus. Tegmina apice truncata, venulis transversis remotis pone medium instructa, angulo apicali commissurali recto.

4. *N. cicatricosa.*—Straminea vel virescens; tegminibus apice latiuscule, ad commissuram anguste fusco-limbatis, pone apicem clavi litura fusca notatis, horum maculis majusculis sparsis nec non carinula basali frontis, carinis thoracis scutellique lutescentibus vel cinnabarinis. ♂

Long. 7, exp. tegm. 23 mill.

Insula Batschian. (Coll. W. W. Saunders.)

Frons latitudine paullo longior, utrimque nonnihil rotundata, tricarinata. Thorax unicarinatus. Tegmina apice truncata, pone medium parce transversim venosa, angulo apicali externo rotundato, interno subrecto.

SARANTUS, n. g.

Facies late triangularis; fronte apice libere dependente. Oculi valde prominentes. Thorax parte postica producta angusta, marginem interiorem tegminum tangente, supra scutellum utrimque leviter emarginata, hujus latera haud tegente. Tegmina areolis apicalibus quinque, discoidalibus duabus. Pedes simplices, tibiis omnibus femoribus longioribus.

Centroto affine genus.

1. *S. Wallacei.*—Niger, dense fortiter punctatus; capite anterius, thoracis fascia antica, ipsa utrimque macula nuda notata, maculaque media laterali partis posticæ productæ, macula laterali scutelli pectoreque albo-sericeis; tegminibus subferrugineo-fuscis, parte apicali vitrea, apice fusca. ♀

Long. 10, lat. 3 mill.

Insula Waigiu. (Coll. W. W. Saunders.)

Thorax postice paullo ultra apicem tegminum productus, anterius cornubus duobus longis, subgracilibus, antrorsum productis, leviter divergentibus, apicem versus leviter reflexis, armatus, carina media percurrente et in parte posteriore producta,

acutiuscule tectiformi, nonnihil ante hujus medium, carinula, posterius marginem lateralem attingente, instructus.

HYLICA, n. g.

Corpus oblongo-obovatum. Caput acute productum, capiti generis Orthopterorum *Tettigis* haud dissimile, facie nonnihil reclinata. Ocelli in parte supera capitis prope angulos anteriores oculorum positi. Rostrum brevissimum. Thorax retrorsum nonnihil elevatus, tuberculatus, marginibus lateralibus anticis longis, antico medio angulato-producto. Scutellum elevatum, tuberculatum. Tegmina subcoriacea, apice late membranaceo-marginata. Abdomen tegminibus latius, segmentis posterioribus utrimque acute lobatis et reflexis. Pedes breviusculi, tibiis anticis superne nonnihil dilatatis, posticis superne spinosis.

Genus *Yassinorum* omnium mihi cognitorum maxime mirabile, forte optime prope *Tettigoniam* locandum.

1. *H. paradoxa.*—Nigricans vel fusco-testacea; facie infra medium, excepta macula nigra, disco vel vittis duabus latis ventris sordide stramineis. ♀

Long. 10, lat. $3\frac{1}{2}$ mill.

Birmah. (Coll. Stål.)

Var. *a.*—Pedibus sordide stramineis, fusco-annulatis.

Var. *b.*—Pedibus fusco-testaceis, femoribus pallido-fasciatis.

Frons basi in cornu breve, compressum, leviter curvatum producta, medio tuberculis duobus parvis instructa. Thoracis tuberculа duo postica distantia reliquis altiora, compressa. Scutellum ante medium valde elevatum, parte elevata disco excavata, utrimque magis compresso-elevata, prope apicem tuberculo conico instructum.

PHILAGRA, n. g.

Caput protuberans, fronte lævi. Thorax sex-angularis, antice rotundatus, marginibus lateralibus anticis brevibus. Scutellum triangulare, latitudine paullo longius. Tegmina immarginata, subconvexa, venis haud elevatis. Pedes longiusculi, tibiis anticis femoribus brevioribus, posticis bi-spinosis.

Aphrophoræ affine genus.

1. *P. Douglasi.*—Cæruleo-nigra, nitida, punctulata, nuda; macula capitis subbasali utrimque prope oculos, maculis quattuor minutis ante medium thoracis, rostro, excepto articulo apicali, nec non disco pectoris flavescente-testaceis; capite

longissime producto, thorace scutelloque ad unum nonnihil longiore, parte producta sat gracili, apicem versus sensim magis gracilescente, ante medium arcuato-recurva. ♂

Long. 13 mill.

Insula Batschian. (Coll. W. W. Saunders.)

2. *P. Scotti.*—Nigra, nitida, punctulata, nuda; marginibus partis productæ ante medium maculisque duabus parvis basalibus capitis, nec non disco pectoris lividis; pedibus posticis fusco-testaceis; capite triangulari, apice subreflexo, thoraci et dimidio scutello ad unum æquilongo. ♀

Long. 10 mill.

Insula Batschian. (Coll. W. W. Saunders.)

Aufidus, n. g.

Caput thorace angustius, fronte convexa. Ocelli inter se valde approximati. Thorax sexangularis. Scutellum triangulare, æquilaterum. Tegmina venis distinctissimis, longitudinalibus apicem versus serie unica venularum transversarum conjunctis, prope apicem ad costam venulis transversis distinctissimis instructa. Tibiæ anteriores femoribus nonnihil longiores, posticæ pone medium unispinosæ; articulo primo tarsorum posticorum apicalibus duobus ad unum breviore.

Monecphoræ affine genus.

1. *A. trifasciatus.*—Dilute lutescens; apice rostri, tibiis anticis extus, apice articuli ultimi tarsorum, fascia basali verticis, fascia posteriore thoracis, supra basin tegminum etiam producta, nec non horum fascia ante medium nigris; alis tegminibusque pone fasciam nigram vitreis, his fusco-venosis, areolis parvis ad apicem marginis costalis fuscis. ♀

Long. $5\frac{1}{2}$, exp. tegm. 17 mill.

Insula Mysol. (Coll. W. W. Saunders.)

Mucanum, Am. et Serv.

M. maculigerum, Stål, (Öfv. Vet. Ak. Förh. 1858, p. 438.)

Hæc species differt a *M. canaliculato* cornubus thoracis brevioribus, apicem versus distincte angustatis, angulis apicalibus subrotundatis, angulis segmenti sexti abdominis productis latioribus.

Pygoplatys, Dall.

1. *P. zonatus.*—Supra castaneus, subtus cum antennis fasciaque anteriore thoracis, marginem fere totum anticum hujus cornuum lateralium etiam occupante, testaceo-flavescens; marginibus lateralibus dorsi abdominis fusco-æneis. ♀

Long. 26, lat. 13 mill.

Borneo, Sarawak. (Mus. Brit.)

P. acuto affinis, multo major, aliter pictus. Thorax et scutellum parce distincte punctata, illius lateribus in cornua valida, acutiuscula, sat longa, extrorsum et leviter sursum productis. Scutellum apice fuscum. Venæ hemelytrorum pallidæ. Margines laterales dorsi abdominis fortiter punctati. Femora subtus prope apicem inermia.

Tesseratoma, Lep. et Serv.

1. *T. conspersa.*—Testaceo-flavescens, sat dense punctata, supra remote minute fusco-conspersa. ♂

Long. 25, lat. 14 mill.

Celebes. (Mus. Brit. et Coll. Stål.)

Thorax remote distincte punctatus, ad margines laterales anticos rugoso-punctatus, his medio obtuse rotundato-subangulatis. Metastethii cornu coxas anticas subattingens. Femora apice subtus bispinosa.

Amissus, n. g.

Corpus magnum, ovale. Caput subelongatum, lobis lateralibus longissimis, ante lobum medium contiguis; bucculis valde elevatis. Ocelli ab oculis remoti. Antennæ quadriarticulatæ. Thorax margine postico medio supra basin scutelli rotundato-producto. Scutellum apice productum. Corii margo apicalis rectus, angulus apicalis rotundatus. Membrana basi areolis compluribus, venas longitudinales emittentibus, instructa. Mesosternum elevatum, antice nonnihil productum et fissum. Metasternum leviter elevatum, postice latissime sinuatum. Ventris segmentum secundum basi medio leviter elevatum et productum. Pedes breviusculi, femoribus apice subtus spinis duabus armatis; tibiis posticis femoribus subæquilongis; articulis primo et secundo tarsorum æquilongis.

Hypenchæ affine genus, structura capitis sternorumque distinctum.

1. *A. Atlas.*—Fusco-castaneus, thoracis limbo angusto parteque posteriore, apice scutelli, hemelytris, coxis, trochanteribus margineque abdominis dilute castaneis; antennis, venis hemelytrorum tarsisque subcastaneo-flavis; angulis apicalibus segmentorum abdominis nigris; thorace valide cornuto. ♀

Long. 41, lat. 19 mill.

Singapore. (Coll. W. W. Saunders.)

Caput lateribus subparallelis, medio leviter sinuatis, apice subtruncatum, latitudine plus duplo longius. Antennæ articulo secundo tertio nonnihil longiore, sed apicali breviore. Thorax remote distincte punctatus, postice lævisculus, angulis lateralibus in cornua longa depressa, leviter arcuata, oblique antrorsum productis, marginibus lateralibus anticis crenulatis. Scutellum remote distincte punctatum, apice læve. Hemelytra dense punctulata, venis lævibus. Subtus dense alutaceus.

HYPENCHA, Am. et Serv.

1. *H. luctuosa.*—Obovata, subæneo-nigra, supra parce distincte, in hemelytris subtilius punctulata, subtus dense subtiliter ruguloso-punctata; antennarum articulo apicali, basi excepta, capite subtus, meso- et meta-sternis flavo-testaceis; angulis lateralibus thoracis vix prominentibus. ♂

Long. 28, lat. 15 mill.

Birmah. (Mus. Brit.)

H. apicali (=*Tesseratomati piceo*, Dall.) affinis, angustior, thoracis angulis lateralibus rotundatis, vix extrorsum, nullo modo antrorsum prominentibus, tantum differt. Margines abdominis immaculati. Femora posteriora subtus prope apicem spinis duabus armata.

2. *H. ophthalmica.*—Distincte punctata, obscure ferruginea, subcupreo-induta, subtus cum pedibus, apice scutelli maculisque marginalibus abdominis sordide testaceo-flavescens; tibiis superne nigro-marginatis. ♀

Long. 24, lat. 12 mill.

Ligor Malaccæ. (Coll. Stål.)

Oculi magni. Thorax angulis lateralibus nonnihil prominentibus, marginibus lateralibus anticis subrectis. Femora postica apice subtus bispinosa.

Siphnus, n. g.

Corpus obovatum. Caput sat magnum, obtuse triangulare. Antennæ quadriarticulatæ. Thorax postice nonnihil productus, marginibus lateralibus posticis leviter sinuatis. Scutellum triangulare, apice angustum. Metasternum elevatum, antrorsum cornuto-productum. Pedes breves, validi, inermes.

Tesseratomati affine genus, capite majore, in hac familia maximo, thorace posterius minus producto distinctum.

1. *S. Alcides.*—Flavo-castaneus, nitidus, hemelytris obscurioribus ; antennis obscure subæneo-piceis, articulo apicali apicem versus dilutiore ; marginibus lateralibus thoracis abdominisque nec non costali hemelytrorum anterius viridi-æneis ; membrana fusca. ♂

Long. 31, lat. 16½ mill.

Cambodia. (Coll. Stål.)

Thorax latitudine quinta parte brevior, parce distincte punctatus, margine antico medio nonnihil sinuato, marginibus lateralibus pone medium leviter rotundatis, haud reflexis, margine postico leviter rotundato. Scutellum parce distincte punctatum. Hemelytra subtiliter remote punctata.

2. *S. Hector.*—Anguste obovatus, dilute castaneus, remote obscurius punctatus ; scutello, antennis pedibusque fusco-castaneis ; apice articulorum duorum apicalium antennarum, apice scutelli parteque basali femorum flavo-castaneis ; hemelytris castaneis, venis parce flavescente-conspersis ; membrana fusca ; marginibus lateralibus anticis thoracis, margine abdominis maculisque transversis irregularibus ventris, in seriebus quattuor dispositis, subæneo-fuscis. ♂

Long. 29, lat. 15 mill.

Ligor Malaccæ. (Coll. Stål.)

Præcedente angustior, densius et distinctius punctatus. Thorax latitudine tertia parte brevior, marginibus lateralibus anticis leviter incrassatis, rectis, antice levissime rotundatis, margine antico medio leviter subsinuato, basali subrecto.

Eusthenes, Dall.

1. *E. sævus.*—Olivaceo-niger, in ferrugineum leviter vergens, subtus cum basi articuli apicalis antennarum apiceque scu-

telli flavo-testaceus, hic illic purpurascente et ænescente-indutus. ♂ ♀

Long. 27—30, lat. 13 mill.

China borealis. (Mus. Brit.) Dekan. (Coll. Stål.)

E. robusto et *E. cupreo* valde affinis, illo minor, hoc major, antennis paullo crassioribus, colore articuli apicalis antennarum apicisque scutelli, præsertim tamen parte elevata metasterni postice angustiore spinaque magna femorum posticorum maris propius ad basin posita, distinctissimus; spinæ reliquæ femorum posticorum quam in *E. robusto* pauciores et minores.

2. *E. Polyphemus.*—Supra plus minus obscure ænescente-castaneus, subtus cum pedibus, apice scutelli maculisque parvis marginalibus dorsalibus abdominis flavo-castaneus. ♂ ♀

Long. 33, lat. 17 mill.

India orientalis borealis. (Mus. Brit.) Dekan. (Coll. Stål.)

Quoad colores *Eurosto valido* similis, cum eodem haud confundendus; *Eustheni robusto* affinis, differt tantum thoracis marginalibus lateralibus anticis haud nisi posterius leviter rotundatis, angulis lateralibus nonnihil magis prominulis, spina maxima femorum posticorum tibiisque posticis magis curvatis.

Lyramorpha, Westw.

1. *L. diluta.*—Subovalis, subolivaceo-flavescens, supra minus dense, distincte, in hemelytris densius et subtilius, punctulata, subtus dense minute rugulosa; scutelli apice acuto; marginibus abdominis minute nigro-serrulatis; lobis analibus lateralibus triangularibus, acutis, longitudine laterali segmenti apicalis ventris vix longioribus. ♀

Long. 26, lat. 13 mill.

Insulæ Aru. (Mus. Brit. et Coll. W. W. Saunders.)

L. rosea major, capite antice latiore et minus producto, thorace longiore, scutello acutiore, abdomine retrorsum minus angustato appendicibusque analibus brevioribus differt.

Oncoscelis, Westw.

1. *O. sulciventris.*—Subovata, griseo-ferruginea; thorace scutelloque distincte et sat dense, hemelytris subtiliter densissime punctatis; subtus læviuscula; antennis dilute rufo- vel flavo-ferrugineis; thoracis marginibus lateralibus anticis nigris, linea intramarginali lineaque longitudinali media, per

scutellum continuata, nec non hujus apice maculaque in angulis basalibus flavo-testaceis. ♂ ♀

Long. 23, lat. 12 mill.

Moreton Bay. (Mus. Brit. et Coll. Stål.)

♂ Segmentis ventralibus quarto, quinto et sexto sulcatis, segmento anali apice sat profunde bisinuato.

♀ Ventre haud sulcato, segmento sexto medio producto et inciso.

O. Australasiæ minor, capite multo breviore, antennis longioribus, pedibus gracilioribus, tibiis posticis longioribus, angulo apicali corii minus acuto differt. Caput latitudini intra-oculari subæquilongum, apice obtusum. Femora postica non nisi serie granulorum subtus instructa. Tibiæ posticæ apice nonnihil incrassatæ.

Stilida, n. g.

Corpus ovale, subdepressum. Caput parvum, apice acuminatum. Antennæ quadriarticulatæ, articulo primo capitis apicem superante, secundo omnium longissimo. Thorax sexangularis. Scutellum triangulare, latitudine basali nonnihil longius, apice obtusum. Membrana basi areolis destituta. Sterna haud elevata. Pedes mediocres, subgraciles, femoribus inermibus, posticis haud incrassatis, tibiis posticis femoribus æquilongis.

Oncoscelidi affine genus.

1. *S. indecora.*—Pallide castanea, punctulata; antennarum articulis duobus basalibus sæpe in viridi-olivaceum vergentibus; thoracis marginibus lateralibus anticis vix rotundatis, reflexis, angulis posticis leviter productis; corii margine apicali distincte sinuato, pallido; margine imo abdominis nigro. ♂ ♀

Long. 23—26, lat. 11—12 mill.

Moreton Bay. (Mus. Brit. et Coll. Stål.)

Dalcantha, Am. et Serv.

1. *D. inermipes.*—Supra obscure ferrugineo-ænea, subtus cum pedibus limboque costali hemelytrorum a basi vix ad medium testaceo-flavescens, parce ferrugineo-varia; linea media longitudinali ventris antennisque, horum articulo basali flavo-testaceo excepto, nigris. ♂

Long. 20, lat. 10 mill.

Punjab. (Mus. Brit.)

D. dilatatæ affinis, thorace paullo breviore, parte laterali magis dilatata et rotundata, antennis gracilioribus, femoribusque inermibus differt.

Mattiphus, Am. et Serv.

1. *M. nigridorsis.*—Supra niger, in ferrugineum obsolete vergens, subtus cum antennis pedibusque testaceo-flavescens; margine imo ventris articuloque quarto antennarum nigris, hoc basi flavescente, articulo tertio, apice excepto, infuscato; membrana viridi-ænea. ♂ ♀

Long. 29, lat. 15 mill.

India orientalis, Punjab. (Mus. Brit. et Coll. Stål.)

M. oblongo affinis, major, supra niger, thorace antrorsum magis ampliato, angulis lateralibus magis productis, minoribus, margine antico ad partem reflexo, angulis posticis segmenti sexti abdominis acutius et paullo longius productis differt. Caput obtusum, latitudini intra-oculari subæquilongum. Thorax antrorsum sensim distincte ampliatus, angulis lateralibus antrorsum distincte productis. Anguli postici segmenti sexti abdominis acuti.

2. *M. æruginosus.*—Ovalis, supra viridi-æneus, punctulatus; thorace transversim leviter rugoso, hoc pone medium hemelytrisque intus in ferrugineum vergentibus; subtus cum pedibus, apice imo scutelli, apice articuli tertii et basi articuli quarti antennarum nec non maculis parvis marginalibus abdominis testaceo-flavescens, pectore ventreque aureo-purpurascente-nitidis. ♂

Long. 21, lat. 11 mill.

Ceylon. (Mus. Brit.)

Quoad formam thoracis a mihi cognitis congenericis divergens. Statura *Pycani amethystini; Mattipho reflexo* proximus, thoracis marginibus lateralibus ab apice ultra medium rectis dein obtuse rotundato-angulatis, antennis crassioribus, alio modo coloratis, distinctissimus. Femora inermia.

Pycanum, Am. et Serv.

1. *P. amplicolle.*—Nigrum, minute rugulosum, punctulatum, subtus in ferrugineum vergens; thorace transverso, angulis lateralibus antrorsum productis. ♀

Long. 32, lat. 18 mill.

India orientalis borealis. (Mus. Brit.)

Statura fere *Mattiphi oblongi*, thorace proportionaliter latiore, antrorsum magis dilatato angulisque lateralibus magis productis.

Antennæ articulis secundo et quarto æquilongis, tertio nonnihil longioribus. Thorax a basi antrorsum sensim nonnihil ampliatus, dein subito angulum antrorsum subproductum utrimque formans. Scutellum thorace distinctius punctatum. Subtus densissime subtiliter ruguloso-punctulatum. Femora subtus prope apicem spinis duabus armata, spina interiore femorum posteriorum valida. Tibiæ posticæ pone medium leviter curvatæ.

2. *P. angulatum.*—Subæneo-nigrum, subtus fusco-ferrugineum, viridi-æneo-indutum; maculis parvis marginalibus abdominis flavo-testaceis; thoracis lateribus angulatis. ♀

Long. 32, lat. 16½ mill.

Siam. (Coll. Stål.)

Thorax lateribus ampliatis, angulatis, angulis antrorsum versis, margine antico partis lateralis dilatatæ sinuato, marginibus lateralibus subparallelis. Femora subtus prope apicem bispinosa. Tibiæ posticæ distincte curvatæ.

3. *P. nigro-marginatum.*—Pallide subolivaceo-flavescens vel virescens, supra remote distincte, in hemelytris paullo densius et subtilius punctatum, subtus dense minute ruguloso-punctulatum; marginibus angustis lateralibus thoracis, costali hemelytrorum basin versus, apice angulorum apicalium segmenti ultimi abdominis nec non hujus marginibus lateralibus nigris; membrana vitrea; antennis apicem versus cæruleo-nigris. ♂

Long. 20, lat. 10 mill.

Tringany Malaccæ. (Mus. Brit. et Coll. Stål.)

A congenericis colore valde discrepans. Caput latitudine intraoculari nonnihil longius, apice obtusum. Antennæ articulo secundo tertio longiore, apicali breviore. Thorax uti in *Mattipho laticolli* formatus, basi late rotundatus, a basi antrorsum sensim nonnihil angustatus, dein antice subito angulum rectum, apice rotundatum, utrimque formans. Abdomen apicem versus sensim nonnihil ampliatum, segmenti ultimi angulis apicalibus longe, acute, oblique retrorsum productis, divergentibus. Femora antica inermia, posteriora subtus prope apicem unispinosa.

Amasenus, n. g.

Corpus ovale, depressum. Caput lobis lateralibus medio longioribus, nonnihil distantibus. Rostrum basin segmenti tertii ventris attingens. Antennæ breviusculæ, quinque-articulatæ, articulo se-

cundo tertio breviore. Thorax marginibus lateralibus crenulatis. Scutellum postice sat longe productum, lateribus partis productæ parallelis. Sterna haud elevata. Pedes posteriores distantes.

Placosterno affine genus. *Placosternum* ab auctoribus immerito ad *Phyllocephalida* refertur; me judice rectius ad *Pentatomida* pertinet, in vicinitate *Tropicoridis* et *Ægii*.

1. *A. corticalis*.—Griseo-stramineus, remote fusco-punctulatus; lituris magnis basalibus thoracis et nonnullis sparsis, confluentibus, corii subæneo-nigris; vitta laterali prostethii obscure ænea; fascia prope apicem femorum fasciisque duabus tibiarum fuscis. ♀

Long. 24, lat. 13 mill.

Ligor Malaccæ. (Coll. Stål.)

Caput utrimque ante oculos sublobatum, ante lobum leviter sinuatum, lateribus dein subparallelis, lobis lateralibus apicem versus valde oblique sinuato-truncatis. Thorax angulis lateralibus prominentibus, apice subsinuato-truncatis, marginibus lateralibus anticis medio sinuatis, ante sinum rotundatis et crenulatis. Scutellum basi leviter bigibbosum.

Derepteryx, White.

1. *D. obscurata*.—Obscure fusco-ferruginea, remote griseo-sericea; thorace angulis lateralibus foliaceis, antrorsum valde productis, in margine antico dentatis; tibiis omnibus dilatatis. ♂ ♀

Long. 27, lat. 9 mill.

Shanghai. (Mus. Brit.)

♂. Femoribus posticis sat incrassatis, rectis, parce tuberculatis, subtus spinis tribus obtusis et prope apicem dente lato, magno, armatis; tibiis posticis a basi ultra medium utrimque dilatatis, parte dilatata superiore a basi ad medium tibiæ sensim ampliata, dein subito valde angustata, parte dilatata inferiore basi angusta, dein nonnihil ampliata, pone medium tibiæ in dentem acutum prominente.

♀. Femoribus posticis parum incrassatis, haud tuberculatis, subtus apicem versus spinula et apice dente lato, subobtuso, armatis; tibiis posticis ultra medium utrimque, supra magis quam subtus, dilatatis, parte dilatata superiore pone medium latissima, inferiore inermi.

D. Grayi proxima, minor, obscurior, thoracis processubus lateralibus multo brevioribus, ante capitis apicem haud multo

productis. Thorax parce granulatus. Femora anteriora subtus apice dente obtuso, lato, obliquo, intermedia præterea spinulis nonnullis obtusis armata. Tibiæ anteriores ante medium in lobum latum ampliatæ.

Mictis, Leach.

1. *M. limbativentris.*—Elongata, subdepressa, nigra, distincte punctata; vitta lata laterali pectoris cinnabarina; abdominis limbo sat lato testaceo-flavo (vel cinnabarino ?). ♀

Long. 27, lat. 7 mill.

Dory, Nova Guinea. (Mus. Brit.)

Antennæ articulo basali omnium longissimo, apicali tertio vix longiore. Thorax marginibus lateralibus rectis, denticulatis, a basi ultra medium flavo-testaceis. Hemelytra margine costali basin versus flavo-testaceo. Abdomen hemelytris vix latius. Femora subtus prope apicem unidentata, postica recta, modice incrassata, subtus pone medium serie tuberculorum minutorum instructa.

XLVII. *On the Generic Characters afforded by the Habits of various leaf-mining Micro-Lepidopterous Larvæ.*

By H. T. Stainton, Esq., F.L.S.

[Read Sept. 7th, 1863.]

At the last meeting of this Society a question was put by Professor Westwood respecting the extent to which generic characters were furnished by the habits of different leaf-mining larvæ. I have, therefore, sketched out the annexed Table of the principal genera of mining Micro-Lepidopterous larvæ, in order that from it the difference in habits and structure may be seen at a glance.

I should premise that we find mining larvæ in four Orders of insects—*Coleoptera*, *Hymenoptera*, *Lepidoptera*, and *Diptera*. The last-named Order is the most extensively represented amongst mining larvæ : and these mines are those which are perhaps most generally known, as they so readily strike the eye. The Coleopterous mining larvæ are, I believe, principally referable to the *Curculionidæ* and *Halticidæ*. The Hymenopterous mining larvæ are not numerous, but some of the smaller species of *Fenusa* make blotches in the leaves of *Rosaceæ* so similar to those made by Lepidopterous larvæ that they will at times deceive even a practised eye.

Amongst *Lepidoptera* we meet with mining larvæ where perhaps we should least expect them ; amongst the *Sphingina* at least one species of *Procris* (*P. Globulariæ*) has been observed in the larva state mining the leaves of *Centaurea Jacea*,* and the greater number of the *Tortricina* are leaf-miners when very young.

It must be understood that in the following remarks I shall confine myself entirely to such mining larvæ as belong to the *Tineina*.

In the annexed Table I have divided the twenty genera enumerated (I consider *Tinea bistrigella*, Haw. = *dilorella*, H.-S., as

* Zeller, Zeitschrift für Entomologie von dem Verein für Schlesischen Insectenkunde, pp. 31, 83.

the type of a new genus yet to be founded) into several groups for the purpose of more ready comparison.

In the first group I place the six genera, *Nepticula*, *Cemiostoma*, *Lyonetia*, *Phyllocnistis*, *Bucculatrix*, and *Lithocolletis*. Of these, it will be observed that all, except *Bucculatrix*, not only remain miners during the whole of their larval existence, but do not come out of one mine to enter another: it is indeed true that the larva of *Phyllocnistis saligna* will move from one willow leaf to another, but this it does without ever coming out of its mine, for it pursues its excavations down the footstalk of one leaf and then under the bark of the twig to the footstalk of another leaf, so that it is completely under cover during its period of passage from one leaf to another; and in its curious habit it thus reminds us of the covered way by which the Pope in times of trouble can retreat in safety from the Vatican to the Castle of St. Angelo.

Of the remaining five genera, two, *Phyllocnistis* and *Lithocolletis*, pass the pupa state also within the mine. The former, when about to change to the pupa, gives a slight curve to the edge of the leaf, otherwise the leaf remains flat; but no *Lithocolletis* mine remains flat, the leaf always curving, and sometimes very considerably, towards the upper or underside, according as the larva happens to mine the upper or underside respectively. This curving of the leaf is effected in the following way: the larva in the first instance loosens the upper or lower epidermis to the extent that it will ultimately require for its mine, and the loosened epidermis is then gathered in folds together, and thus causes the remainder of the leaf to curve towards that side. Hence mines of the genus *Lithocolletis* cannot be well shown from leaves which have been pressed and dried, as their character is lost when they are flattened. Of the three genera, *Nepticula*, *Cemiostoma*, and *Lyonetia*, of which the larvæ quit the leaf when full fed, the two first named form cocoons, but the angulated pupa of a *Lyonetia* is simply suspended in a sort of hammock; the cocoon of a *Cemiostoma* is of pearly-white silk, pointed at each end; that of a *Nepticula* is of yellow, brown, red-brown, or violet silk, and of a roundish oval form. The larvæ of *Bucculatrix* cease to mine when comparatively young, and then feed on the external surface of the leaf, of which they gnaw half the thickness. As was well observed by Professor Zeller, they are the smallest known external-feeding Lepidopterous larvæ; their cocoons are exceedingly peculiar, of an elongate form, distinctly ribbed or fluted.

To compare further the mines of these six genera, it may be ob-

served that whereas *Lithocolletis* conspicuously blotches and curves the leaf, the mine of a *Phyllocnistis* is only very slightly discoloured; that of *P. saligna* simply shows a whitish appearance on the under side of willow leaves, and that of *P. suffusella* is even more inconspicuous, the glistening appearance which it causes on the upper side of poplar leaves being extremely similar to what we see on leaves over which a snail has crawled. The mines of *Nepticulæ* vary much in form from elongate slender galleries to spiral and contorted mines forming blotches, and even to more complete blotches, as in the mine on sloe leaves of *N. plagicolella*. The mine of a *Bucculatrix* is not distinguishable in form from the mine of a *Nepticula*, but if the larva is in it we can, on holding it to the light, distinguish the six anterior legs, thus clearly showing that it is no *Nepticula* larva; and if the larva has left it, the very small size of the mine, scarcely half the size of that of the smallest known *Nepticula* mine, enables us at once to recognize it. The mine of *Lyonetia Clerckella* might also pass for that of a *Nepticula*, but if the larva has left it, the long space between the last grain of excrement and the place of exit from the mine shows sufficiently clearly that the larva which had inhabited it was longer than any known *Nepticula* larva; and if the larva be still in the mine, its anterior legs, readily seen when the leaf is held to the light, would at once satisfy us that here we have no larva of *Nepticula*. In the mines of the genus *Cemiostoma*, though the character of each species is very evident, it is much less easy to establish any character by which the genus may be easily recognized; the mine of *Cemiostoma Wailesella* is so completely Nepticuliform that it is only recognized as belonging to another genus by those who are already acquainted with it; the larva of *Cemiostoma Spartifoliella* has the peculiarity of mining under the bark of the stem of the broom, but the other larvæ of the genus form blotches in which there is generally a dark central portion; one *Nepticula*, however, makes a very similar mine (*N. argentipedella* in birch leaves).

In the second group I place the genera *Elachista*, *Tischeria*, *Ornix*, *Gracilaria* and *Laverna*; in one only of these genera is the larva restricted to its original mine, and in that genus (*Tischeria*) the change to the pupa state also takes place within the mine. The mine of a *Tischeria* is generally flat, but sometimes it slightly curves the leaf, as in the mine of *T. angusticollella* on rose leaves, and that of *T. Gaunacella* on sloe leaves; they all mine the upper surface of the leaf, and the curve of the leaf is much less than the curve given to the leaves which are mined by larvæ of the genus

Lithocolletis which are upperside feeders, such as *L. Coryli* on hazel, and *L. Corylifoliella* on hawthorn and apple. The larvæ of the genus *Elachista* always remain miners, but can move from one leaf to another; they are exclusively confined to the *Gramineæ*, *Cyperaceæ*, and to one genus of the *Juncaceæ* (*Luzula*); as a rule, the larvæ come out of the mine to undergo their change to the pupa state, and the pupa is generally somewhat angular, fastened with a silken girth round the middle; the larva of one species, *E. quadrella*, assumes the pupa state within the mine. In the genera *Ornix* and *Gracilaria* the larvæ all appear to be miners when young; several of the smaller species of *Gracilaria* remain miners till quite full fed, and it is even doubtful whether the larvæ of *G. imperialella* and *G. omissella* are not restricted to their original mine; but no *Ornix* larva remains a miner till full fed. When an *Ornix* larva quits its mine, it simply folds down a piece of the edge of the leaf, but a *Gracilaria* larva twists the edge of the leaf over in such a way as to form a cone, a proceeding which we only find in one species of *Ornix* (that on the hawthorn, *O. Anglicella*). The cocoon of an *Ornix* is rather flat, and of an ochreous colour, and is placed under a corner of the leaf tightly folded down; the cocoon of a *Gracilaria* is generally glassy white, and placed on the midrib of a leaf; the smaller species form more silky cocoons, which are generally well concealed. In the genus *Laverna* we meet with very considerable variety of habit amongst the larvæ, but still the greater part of them are miners, and remain miners always, though freely able to move from one leaf to another; a considerable number of the larvæ of *Laverna* are attached to the single genus *Epilobium*, yet others feed on plants in no way related to the *Onagraceæ;* thus *L. miscella* feeds on *Helianthemum vulgare*, and *L. Stephensi* in all probability feeds under the bark of oak trees, whilst the larva of the curious *L. Phragmitella* occurs in the heads of *Typha*. The young mine of *Laverna Raschkiella* is so like the mine of a *Nepticula* that it might readily pass for one, but for the different structure of the larva. The larva of *Laverna Epilobiella* feeds on the outside of the leaves of *Epilobium hirsutum*, though possibly when very young it operates as a miner.

In considering the next group of five genera, *Acrolepia*, *Gelechia*, *Coleophora*, *Cosmopteryx* and *Bedellia*, it will be observed, in the first instance, that I have assigned two lines to the genus *Gelechia;* in fact this genus comprises in itself larvæ of almost every variety of habit; nearly 300 European species are already

known, and we obtain new species of *Gelechia* from every part of the globe where *Micro-Lepidoptera* have been collected. It must be understood, therefore, that in this Table I do not allude to the genus *Gelechia* in its entire extent, but only to those larvæ which are miners; some of these are only miners in their early youth, whereas others continue miners till they are quite full fed; all the larvæ in this group are able to move freely from one leaf to another. The differences in the mines of some of these genera are not very evident—but *Bedellia* and *Cosmopteryx* have the mines always perfectly clean, the excrement being carefully ejected from a hole in the surface of the mine. The pupation at once distinguishes *Acrolepia*, *Cosmopteryx* and *Bedellia;* the last-named has an angulated suspended pupa (it appears to be a rule that whenever a pupa is suspended or only supported by a silken girth it should be more or less angulated, and that the pupæ in cocoons should always be of more regular forms); the pupa of *Cosmopteryx* is enclosed in an opaque, white silk cocoon, rather pointed at each end; and the pupa of *Acrolepia* is enclosed in an open network cocoon, very similar to a cocoon of the genus *Plutella*. The larvæ of the genus *Coleophora* cease to be true miners when very young, but the greater part of them continue miners after a fashion till they are quite full fed. Out of their first mine these larvæ construct a portable case, by cutting out the two sides of the leaf, which they fasten together with silk, and from this case, when moving from one leaf to another, they exsert only a few of the anterior segments; this portable case they then attach to the underside of a leaf and bore into the interior, feeding between the skins of the leaf, and the larva often quite coming out of its case in its exploration of the interior of the leaf which it is eating—in short, the main difference between a *Coleophora* larva and other mining larvæ is, that it has unlimited means of locomotion. A few of the larger species of the genus only gnaw the surface of the leaves, but the bulk of the species are either leaf-miners or seed-borers.

The four genera composing the next group have this peculiarity in common, that the larvæ are all apodal. On referring to the two last columns of the Table it will be seen that in all the previous genera the larvæ have legs and prolegs, with the exception of *Nepticula* and *Phyllocnistis*. In *Nepticula* indeed we do find certain ventral projections, which have been assumed to serve for legs, but there is nothing of the articulate character of a true leg; but in the group of *Antispila*, *Tinagma*, *Tinea bistri-*

gella and *Micropteryx*, we do not find even such ventral projections as occur in *Nepticula*. The larvæ in all these genera remain miners during their whole lives, and never quit one mine to enter another; in the three first-named genera the full-fed larva cuts out an oval case, in which it descends to the surface of the ground, and in which it undergoes its transformation to the pupa state—but though the structure and habits of these larvæ are so very similar, their mines have distinctive characters and can be instantly recognized. An *Antispila* larva never commences its mine with a slender gallery, from the very first it has the form of a blotch, whereas the mine of *Tinea bistrigella* commences with a very long and slender gallery, which is generally nearly two inches in length before the blotch portion of the mine is commenced; the mine of a *Tinagma*, on the other hand, has a character peculiarly its own, the greater portion of it being in the interior of the midrib of the leaf, and hence invisible, so that we see only the incipient very slender mine of the young larva, and a small blotch formed by the larva when just full fed, previous to cutting out its case; at present only one larva of this genus is known to us, *Tinagma resplendellum*, which feeds on alder leaves, but it is hoped that others will soon be discovered; in the perfect state, *T. sericiellum* and *T. Stanneellum* both frequent oaks, and Professor Frey informs me that he once found an oak leaf from which an oval case had been cut out near the midrib. The larvæ of *Micropteryx* do not cut out cases; when full fed they crawl out of the mines and descend to the ground, where they construct cocoons covered with grains of earth and sand; their mines however are readily recognized by the form of the excrement, which, instead of being in little round grains, is in short lengths like pieces of black thread; the mines of some of these larvæ, when young, can hardly be distinguished from the mines of *Nepticula*, and this resemblance is rather remarkable when we bear in mind that in the structure of the heads of the perfect insect and in the neuration of the wings there is a wonderful similarity between *Nepticula* and *Micropteryx*.

There are a few other genera in which mining larvæ occur, but I have not wished to swell out these remarks, by introducing every individual genus in which examples of mining larvæ are to be met with—such as *Stephensia Brunnichiella*, *Stagmatophora Heydeniella*, *Asychna terminella*, *Chrysoclysta Schrankella* (in habit not distinguishable from a *Laverna*), *Chauliodus Chærophyllellus*

(which mines when *very* young), *Coriscium Brongniardellum*, *Ocnerostoma Piniariella*, *Cedestis Farinatella*, *Perittia obscurepunctella* and *P. Herrichiella*, *Glyphipteryx equitella*, *Atemelia torquatella*, *Prays Curtisellus* (a leaf miner when very young) and *Incurvaria*.

XLVIII. *Descriptions of New* Phytophaga. By J. S. Baly, Esq.

[Read 5th Oct., 1863.]

The most striking amongst the insects described in the present paper are two magnificent species of *Æsernia*, a genus of true *Chrysomelidæ;* they were taken in New Guinea by Mr. Wallace, who has brought home no less than five species of this beautiful genus from that part of the world, three being new. In addition to several other beautiful species, also collected by that gentleman, are some highly interesting insects from Australia, sent home by Messrs. Diggles, Waterhouse, and others; amongst them a species of *Plagiodera*, taken near Sydney by Mr. Lowne; this is the first time, so far as I am aware, that any species of the genus has been received from any part of the Australian continent. Lastly, I must mention a new *Australica*, taken in the interior of Australia by Mr. F. G. Waterhouse.

List of Species described.

1. *Lema militaris* ..... New Guinea.
2. *Crioceris Bohemani*..... South Africa.
3. ——— *lateritia* ..... Northern China.
4. ——— *Clarkii*..... Ceram.
5. ——— *Pfeifferi* ..... Amboyna.
6. ——— *terminata*..... Ternate, Batchian.
7. ——— *obesa* ..... Amboyna.
8. *Mastostethus Philemon* ..... Upper Amazons.
9. *Phyllocharis apicalis* ..... New Guinea.
10. *Æsernia magnifica*..... New Guinea.
11. ——— *regalis* ..... New Guinea.
12. *Chalcolampra* 10-*pustulata* .... Batchian.
13. *Australica Waterhousii* ..... Interior of Australia.
14. ——— *interrupto-fasciata* .. Australia.
15. ——— *transversa*..... Moreton Bay.
16. ——— (*Stethomela*) *variabilis* Mysol.
17. *Plagiodera Lownii* ..... Sydney.
18. *Adorium Bowringii*..... Hong Kong.
19. *Aplosonyx elongata* ..... Northern China.

Genus Lema, Fabr.

1. *Lema militaris.*

Subelongata, subcylindrica, nigra, nitida; thorace, pectore, profemorum basi et apice, mesofemorum apice, metafemorum plagâ infra, elytrorumque basi fasciâque vix pone medium, fulvis.

♂. Femoribus posticis valde incrassatis, subtus spinâ validâ armatis.

♀. Femoribus posticis minus incrassatis, muticis.

Long. 4 lin.

Hab. New Guinea. Collected by Mr. Wallace.

Head constricted behind the eyes; face triangular, epistome triangular, front smooth and shining, finely punctured, impressed behind with a short longitudinal fossa; antennæ filiform, three-fourths the length of the body, fifth joint shorter than the two preceding united; eyes notched. Thorax very similar in form to that of *L. papuana*, deeply strangulate just behind the middle, surface smooth, remotely impressed with very fine punctures. Elytra much broader than the thorax, nearly four times its length; sides parallel, their apex regularly rounded, above convex, impressed within the humeral callus, each elytron with two rows of distinct punctures, visible to the apex, the row nearest the suture sulcate in front, interspaces smooth, slightly raised near the apex of the elytron. Body beneath smooth and shining, addomen nearly glabrous. Hinder thighs in the *male* equal to the abdomen in length; in the *female* not extending beyond the first three segments, much less thickened, and unarmed.

This beautiful species belongs to the same section with *L. papuana;* it is larger than that insect, and differently coloured.

Genus Crioceris, Geoff.

1. *Crioceris Bohemani.*

Subelongata, parallela, subcylindrica, nigra, nitida; collo, thorace, scutello, elytris abdominisque apice rufo-fulvis; thorace subremote punctato, punctis piceis; elytris basi obsolete elevatis, fortiter punctato-striatis, interspatiis pone medium costatis.

Long. 5-5⅔ lin.

Var. A.—Metathorace abdomineque rufis.

Hab. South Africa.

Subelongate, parallel, subcylindrical; antennæ robust, gradually increasing in size from the base to the apex, compressed, subperfoliate (these organs closely resemble those of *C. impressa*, but are somewhat stouter); face sparingly clothed with adpressed

silvery hairs. Thorax equal in length to the breadth, narrowed in front, sides constricted in the middle, upper surface impressed with a large but shallow fovea near the basal margin; disc subremotely impressed with large, somewhat deep punctures. Scutellum glabrous, subelongate-trigonate, its apex rounded. Elytra much broader than the thorax, sides parallel, subcylindrical, basilar portion obsoletely raised, bounded beneath by an indistinct and ill-defined transverse depression; surface deeply and regularly punctate-striate, punctures round, piceous, interspaces smooth, plane in front, costate below their middle. Abdomen smooth, nitidous; just within the posterior margin of each segment is a narrow row of fine punctures, clothed with very fine silky hairs, remainder of their surface (with the exception of a few scattered hairs) glabrous, impunctate.

The red colouring on the under surface of the body varies in degree in different individuals from the typical state up to variety A., and possibly in some specimens the legs themselves are more or less rufous.

2. Crioceris lateritia.

Elongata, subcylindrica, rufo-fulva, nitida; antennis, epimeris, pedibusque (femoribus infra exceptis) nigris; abdomine immaculato; mesosterno apice dilatato, retrorsum curvato.

Long. 4—5 lin.

Northern China. Collected by Mr. Fortune.

This insect is so closely allied to *C. subpolita*, Motsch., from Japan (also found in Northern China), that for a long time I had the two species intermingled in my collection; the form of the mesosternum however is a good distinctive character between the two; this part in *C. subpolita* is of normal size and form, viz., oblong, and nearly erect, its apex being truncate and not curving backwards. The abdomen in the present species wants the black spots present in *C. subpolita;* in all other respects the insects appear to be almost indentical.

3. Crioceris Clarkii.

Oblongo-elongata, subcylindrica, nigra, nitida; femoribus anticis quatuor medio, posticis infra, thorace elytrorumque limbo (hoc basi et apice late dilatato) rufo-fulvis; elytris punctato-striatis, striis apice sæpe deletis.

Var. A.—Thorace nigro, abdominis disco rufo-piceo.

Long. 4 lin.

Hab. Ceram. Collected by Mr. Wallace.

Head deeply constricted behind the eyes, face triangular, front

remotely punctured; antennæ shorter than half the length of the body, subincrassate, outer joints slightly compressed and subperfoliate, eyes notched. Thorax subquadrate, scarcely broader than long; sides constricted in the middle, above subcylindrical; punctured as is *C. impressa*, the single longitudinal row of punctures down the middle of the disc being also present as in that species. Elytra oblong, much broader than the thorax, slightly dilated behind, their apex broadly rounded; above convex, indistinctly flattened along the back, transverse depression below the basilar space usually obsolete, at other times present, although indistinct; punctures arranged in eleven longitudinal rows, the first of which is very short, the punctures are large, deeply impressed, and placed at irregular intervals on the anterior half of the rows, on the hinder half they become much smaller and indistinct, the rows themselves being frequently entirely obsolete; the inner row next the suture is however always sulcate on the hinder portion of its course, and, together with one or two of the outer striæ, remains always entire; interspaces smooth, impunctate. The amount of fulvous colour on the surface varies greatly; in some specimens, the black ground occupies almost entirely the posterior three-fourths of the surface, the basal fourth, and a narrow line extending round the outer limb, alone being fulvous; in others the fulvous colour is extended inwards so greatly in all directions (more especially however at the base and apex) as to leave only a common central black patch. Under surface as in *C. impressa*.

4. *Crioceris Pfeifferi.*

Oblongo-elongata, subcylindrica, sanguinea, nitida; antennis (basi exceptâ) elytrorumque dimidio antico, tibiis tarsisque nigro-piceis; elytris punctato-striatis, punctis infra basin sat profunde, prope apicem tenuiter impressis.

Long. $3\frac{4}{5}$—$4\frac{1}{4}$ lin.

Hab. Amboyna. First brought home by Madame Pfeiffer, and since then by Mr. Wallace.

Head deeply constricted behind the eyes; face forming a somewhat elongated triangle; front smooth, without longitudinal impression; antennæ scarcely half the length of the body, somewhat slender, filiform, fifth joint shorter than the two preceding united, basal three joints rufous, the rest black; eyes broadly notched. Thorax subquadrate, subcylindrical, sides deeply constricted in the middle, surface smooth, nearly impunctate, a few remote punc-

tures being only visible on the disc under a lens; in some specimens a row of punctures similar to that in *C. impressa* runs down the middle of the disc. Scutellum forming an elongated triangle, the apex of which is rounded; surface glabrous. Elytra much broader than the thorax, nearly four times its length, oblong, sides nearly parallel, apex broadly rounded; above convex, transversely but obsoletely depressed below the basilar space, longitudinally impressed within the humeral callus; each elytron with eleven rows of punctures, the first short; punctures placed at more regular intervals on the striæ than in the last species (*C. Clarkii*), deeply impressed in front, very small and finely impressed on the hinder half, but nevertheless distinct to the apex; interspaces smooth, impunctate. The black colour on the elytra varies in extent, in some specimens occupying less than half, in others covering two-thirds of the surface. Abdomen somewhat sparingly clothed with adpressed fulvous hairs, which form, however, a distinct row just within the edge of each segment. Hinder thighs not extending beyond the first two segments of the abdomen.

5. *Crioceris terminata.*

Oblongo-elongata, subcylindrica, rufo-fulva, nitida; oculis elytrisque nigris, his tenuiter punctato-striatis, apice rufo-fulvo.

Long. 4 lin.

Hab. Ternate, Batchian. Collected by Mr. Wallace.

Head deeply constricted behind the eyes, face elongate-triangular, forehead smooth, impressed behind with a short longitudinal fossa; antennæ moderately robust, nearly filiform, slightly thickened from beyond the fourth joint, about half the length of the body; eyes notched. Thorax subquadrate, subcylindrical, sides deeply constricted at their middle, upper surface smooth, remotely impressed with fine punctures. Scutellum forming an elongate triangle, its apex rounded. Elytra much broader than the thorax, more than three times its length, sides parallel, apex regularly rounded; above convex, indistinctly impressed at the base within the humeral callus, transversely depressed below the basilar space, surface smooth and shining, each elytron with eleven rows of fine punctures, visible to their apex, the first short, interspaces smooth and flat, impunctate. Legs moderately robust, hinder thighs scarcely thicker than the others, equal in length to the first two segments of the abdomen. Abdomen sparingly covered

with fine adpressed concolorous pubescence, edges of the segments clothed with a row of coarse hairs.

6. *Crioceris obesa.*

Late oblonga, convexa, nitido-rufo-fulva; antennis filiformibus, fulvis; scutello fulvo-piloso; elytris ampliatis, valde convexis, nitido-nigris, infra basin transversim depressis, tenuiter punctato-striatis, striis disci postici deletis, tibiis tarsisque obscure rufis, unguiculis piceis.

Long. 5 lin.

Hab. Amboyna. Collected by Mr. Wallace.

Head deeply constricted behind the eyes; face elongate-trigonate; front impressed with a longitudinal groove; antennæ filiform, somewhat slender, two-thirds the length of the body, pale fulvous, apex of terminal joints fuscous; eyes angularly notched. Thorax sub-cylindrical, constricted on the sides, surface smooth, impressed with a very few minute punctures, arranged on the disc in a longitudinal row.

Genus Mastostethus, Lac.

1. *Mastostethus Philemon.*

Oblongus, modice convexus, nitidus, flavus; coxis posticis, femoribus et tibiis supra, tarsis, epipleuris, capite (faciei inferioris maculâ antennisque apice et infra exceptis), thoracis plagâ transversâ discoidali, scutello elytrisque nigris, his distincte punctatis, singulisque fasciis duabus subcurvatis, primâ obliquâ a scutello fere ad medium marginis exterioris extensâ, secundâ fere transversâ utrimque abbreviatâ, paullo pone medium positâ, flavis.

Long. 4—4½ lin.

Hab. Upper Amazons. Collected by Mr. Bates.

Oblong, moderately convex, somewhat flattened above; head triangular, lower portion of face, with the exception of a transverse patch on the epistome, the labrum and apex of jaws, flavous; epistome transverse, very remotely punctured, bounded above by a deep transverse groove, middle of front impunctate, sides, along the inner margin of the eyes, closely punctured, vertex impressed with subremote punctures; antennæ more than half the length of the body, moderately robust, first four joints entirely black, the rest to the ninth flavous beneath, the last two entirely yellowish-white. Thorax more than twice broader than long at the base, sides slightly rounded and somewhat narrowed from

base to apex, anterior and posterior angles produced, acute; above smooth and shining, remotely punctured, the puncturing finer than that on the head; on either side, immediately in front of the hinder angle, is a large, deep fovea; disc more or less stained with rufo-fuscous, on its middle is a large transverse, somewhat irregular black patch, which varies somewhat in size; in some specimens, a short distance behind the hinder angles of the patch, is a small piceous spot. Scutellum broadly triangular, punctate. Elytra scarcely broader than the thorax, about four times its length, sides slightly narrowed from their base towards their apex; surface deeply but not very closely punctured. Body beneath clothed with coarse fulvous hairs; last abdominal segment impressed with a deep fovea; intermediate pair of thighs stained with a piceous patch on their anterior surface.

Genus Phyllocharis, Dalm.

1. *Phyllocharis apicalis.*

Elongata, parallela, convexa, cæruleo-nigra, nitida; elytris obscure cæruleis, horum apice, capite, thorace abdomineque (hujus disco excepto) rufo-fulvis; antennis nigris.

Long. $5\frac{1}{2}$ lin.

Hab. Dorey, New Guinea. Collected by Mr. Wallace.

Elongate, convex, parallel, blue-black, nitidous; head, thorax, limb and apical segments of abdomen, together with the posterior third of the elytra rufo-fulvous; the remaining portion of the latter obscure metallic-blue. Head smooth, epistome depressed, separated from the face by an angular groove, just above the apex of which is a large deep fovea, from which a longitudinal groove runs upwards to the vertex; antennæ rather longer than half the body, black. Thorax nearly twice as broad as long, moderately convex, smooth, impunctate, with the exception of four parallel foveæ placed two together on either side the disc. Elytra rather broader than the thorax, the sides parallel, apex subacutely rounded; above convex, shoulders slightly prominent, excavated and concave on the outer side below the shoulder, each elytron impressed with about ten indistinct rows of punctures, the first very short; the rows are entirely lost on the posterior third of the surface, which is irregularly punctured; the spaces between the striæ (more especially on the outer disc) are impressed with punctures equal in depth and size to those belonging to the rows themselves, rendering the latter still more difficult to define; the species, however, doubtless varies greatly in the force and depth of the punctation, one of my specimens

being more deeply impressed than the other; in this specimen also the thorax is transversely excavated on either side at the base.

Genus Æsernia, Stål.

1. *Æsernia magnifica.*

Elongata, convexa, viridi-ænea, nitida; abdomine fusco-fulvo, elytrorum dimidio postico fulvo; thorace medio longitudinaliter canaliculato, utroque latere profunde excavato et punctato; elytris punctato-striatis, striis sulcatis, pone medium obsoletis.

Long. 12½ lin.

Hab. New Guinea. Collected by Mr. Wallace.

Elongate, convex, subparallel, shining metallic green. Head fusco-violaceous, vertex metallic green; antennæ purplish black; vertex impressed with a deep longitudinal groove, which runs downwards as far as the semicircular groove separating the epistome from the face. Thorax transverse, twice as broad at the base as long, sides nearly straight, gradually narrowed from the base to the apex, more quickly narrowed immediately behind the latter, anterior angles produced, subacute; anterior margin concave, upper surface very slightly convex, middle of disc impressed with a longitudinal groove; surface smooth, impressed towards the sides with shallow foveæ; immediately within the lateral border is a large, deep, irregular excavation, extending the whole length of the side, its surface deeply impressed with large round punctures; colour bright metallic green, with a faint brassy tinge. Elytra broader than the thorax, subparallel in front, but at the same time being slightly increased in width from their base to the end of their second third; thence to the apex they are obliquely narrowed, the apex itself being slightly reflexed and subacute; upper surface convex, impressed below the shoulders with three or four nearly obsolete foveæ, each elytron with eleven distinctly punctured, sulcate striæ, the first very short, all the others terminating just below the middle of the elytron; posterior two-fifths of the surface fulvous, irregularly punctured.

2. *Æsernia regalis.*

Elongata, convexa, supra fulva, nitida; verticis plagâ elytrisque viridi-metallicis, his margine anguste, plagâ humerali fasciâque latâ flexuosâ, vix pone medium positâ, fulvis; antennis nigro-æneis; thorace transverso-quadrato, lateribus longitudinaliter

sulcato; subtus ænea, prothorace abdominisque apice fulvis; femoribus anticis basi et infra rufo-piceis.

Long. 9 lin.

Hab. Aru Islands. Collected by Mr. Wallace.

Elongate, subparallel, convex, bright shining fulvous above, a large patch on the vertex, and the elytra, bright metallic green; these latter with a narrow line on their outer margin, a patch on the shoulder and a broad transverse flexuose band immediately behind their middle, fulvous; antennæ nigro-æneous, two basal joints fulvous beneath. Head smooth, impunctate, face impressed between the eyes by a large deep triangular fovea, divided in the centre by a longitudinal groove, the latter extending upwards on the vertex; epistome distantly punctured, apex of jaws obscure æneous; antennæ rather longer than half the body. Thorax twice as broad as long; apical border regularly concave-emarginate; sides subparallel, subsinuate, narrowed in front, anterior angles submucronate, their apex obtuse; above smooth and shining, impunctate, sides impressed just within their outer border with several deep foveæ, which are more or less confluent, and form a deep longitudinal fossa, which extends nearly from the base to the apex of the thorax. Scutellum subtrigonate, its apex obtuse. Elytra rather broader than the thorax; sides subparallel, slightly sinuate below the shoulders, indistinctly dilated behind their middle; apex angustate-rotundate; above convex, each elytron with eleven regular rows of distinct punctures, the outer one placed on the extreme lateral edge of the elytron, the first abbreviated a short distance from its base, the others irregular below their middle, and entirely lost on the apical third of the surface, which is smooth and nearly free from punctures; on the disc below the shoulders are three short transverse deeply impressed fossæ, also along the outer border are placed several others, longitudinal, the surface of all being deeply punctured.

Genus Chalcolampra, Homb. et Jacq.

1. *Chalcolampra* 10-*pustulata*.

Oblonga, convexa, parallela, nitida, capite thoraceque rufo-fulvis; antennis extrorsum, pectore, abdomine, scutello elytrisque nigris, horum maculis 10 etsi pedibus flavis, tarsis piceis.

Var. A.—Thoracis disco piceo.

Long. 2 lin.

Hab. Batchian. Collected by Mr. Wallace.

Head short, impressed on the front with several irregular foveæ;

antennæ half the length of the body. Thorax finely punctured. Elytra distinctly punctate-striate on the inner disc, the outer disc irregularly punctured, each elytron with five large yellow patches, the first four ovate, placed in two parallel rows, one just below the base, the other scarcely below the middle; the fifth patch is transverse and subapical.

Genus Australica, Chevr.

1. *Australica Waterhousii.*

Elongata, angustata, parallela, convexa, fusco-ænea, nitida; dorso fortiter et crebre punctato; thorace elytrorum latitudine vel latiori; elytris obsolete vittatis; pedibus antennarumque basibus obscure fulvis.

Long. 3—3½ lin.

Hab. Interior of Australia. Collected by Mr. F. G. Waterhouse.

Whole upper surface of the body closely covered with deep punctures, which sparkle with metallic lustre. Head short, closely punctured; antennæ slender, their apex fuscous. Thorax equal in breadth to the elytra, or even slightly broader, its sides nearly straight and parallel behind, rounded and narrowed towards the apex. Elytra parallel, in some specimens indistinctly narrowed posteriorly, their apex regularly rounded; surface deeply punctured, subrugose towards the sides; each elytron with about five or six indistinct, scarcely elevated vittæ, viz. four or five on the inner and one on the outer disc; the vitta nearest the suture is smooth and impunctate, and therefore more distinct than the others.

I have dedicated this new species of *Australica* to Mr. F. G. Waterhouse of Adelaide, who collected it during his recent expedition across the continent of Australia.

2. *Australica interrupto-fasciata.*

Oblonga, convexa, nitido-lactea; capite thoracisque maculis pallide rufo-fuscis, antennis extrorsum fuscis, elytris punctato-striatis, utrisque puncto humerali fasciisque duabus interruptis, extrorsum abbreviatis, piceis.

Long. 2½ lin.

Hab. Northern Australia.

Oblong, convex, of a pale shining cream colour; the head, together with some obscure markings on the disc of the thorax, pale rufo-fuscous; outer half of antennæ fuscous; elytra each with ten rows of deep fuscous punctures, a small spot on the humeral callus, together with two interrupted transverse bands on the disc, piceous. Head very finely and irregularly punctured, face sepa-

rated from the epistome by an indistinct semi-circular groove; eyes and apex of jaws black, antennæ half the length of the body, the outer half fuscous. Thorax rather more than twice as broad as long, its apex broadly and deeply excavated; sides rotundate-angustate from their base to the apex, anterior and posterior angles subacute; surface transversely convex, deeply but not very closely punctate, sides indistinctly thickened, more coarsely punctured. Scutellum smooth and shining. Elytra slightly broader than the thorax, nearly parallel in front, their apex regularly rounded; above convex, each elytron with ten rows of deeply impressed fuscous punctures, the first abbreviated; on the extreme outer border is also another row concolorous with the disc; a small spot on the humeral callus, together with the two interrupted transverse fasciæ on the disc, piceous; these bands, which are sub-flexuose and abbreviated on the outer disc, are placed, the first across the middle, the second half-way between this latter and the apex of the elytron; they are formed of a number of small elongated piceous spots, which are placed one on each of the longitudinal rows of punctures. Body beneath pale shining fulvous.

3. Australica transversa.

Subelongata, parallela, nitida, subtus nigra; thorace, pectore, femoribus (horum apice excepto), abdominisque limbo, flavis; supra flava, antennis extrorsum, verticis plagis duabus, thoracis basi, scutello, elytrorum fasciâ latâ transversâ prope medium extrorsum abbreviatâ, punctoque apicali, nigris.

Long. $2\frac{1}{2}$ lin.

Hab. Moreton Bay.

Subelongate, parallel, nitidous. Head broad, remotely punctured, epistome separated from the face by a faint angular groove; vertex with two large transverse black patches, which extend, one on either side, from the eye (surrounding its upper margin) nearly to the medial line of the head; outer half of antennæ black. Thorax more than twice as broad as long, slightly narrowed from base to apex, sides nearly straight, suddenly narrowed near the anterior angle; upper surface smooth, remotely punctured, the punctures being irregularly scattered over the surface; the black portion of the surface is formed by two large triangular patches, which, united at the base, extend the whole length of the basal margin, their apices being produced anteriorly two-thirds across the disc. Scutellum black. Elytra broader than the thorax,

parallel, their apex regularly rounded; above convex, each elytron with a row on the outer border and ten others on the disc, of distinct punctures, the row nearest the suture short, interspaces minutely punctured; the transverse black band, which is placed nearly across the middle of the elytra, extends for a short distance upwards along the suture; downwards it is continued as a narrow line to the apex itself, where it is dilated into a small spot.

4. *Australica* (*Stethomela*) *variabilis*.

Oblonga, convexa, rufo-fulva, nitida; capite abdomineque (hujus segmento apicali excepto) piceis; antennis nigris; elytris purpureis, fasciâ latâ transversâ prope medium, rufo-fulvâ.

Var. A. Elytris rufo-fulvis, fasciâ latâ basali et singulis plagâ magnâ subapicali purpureis; abdomine rufo-fulvo.

Var. B. Capite rufo-fulvo, elytris (basi prætermissâ) purpureis.

Long. 4—5 lin.

Hab. Mysol; Northern part of New Guinea.

Oblong, convex, parallel, as seen above very variable in markings and colour. Head smooth, epistome separated from the face by a deep transverse groove, from the middle of which a short longitudinal grooved line runs upwards on the face. Antennæ more than half the length of the body, black; the two basal joints fulvous beneath; epistome fulvous. Thorax rather more than twice as broad as long, sides straight and parallel, narrowed and rounded in front, anterior angles subacute, anterior margin concave; above moderately convex, smooth, impunctate. Elytra broader than the thorax, sides parallel, their apex regularly rounded, each elytron impressed with eleven rows of distinct punctures, the outer one placed on the lateral border, entire, the inner one nearest the suture, very short, the others all terminating about the commencement of the hinder third of the elytron, which is very smooth and impunctate; the seventh stria from the suture becomes irregular and confused just before its termination. A line on the anterior surface of the apical half of the thighs, together with a similar stripe extending along the whole front edge of the tibiæ, piceous.

Genus Plagiodera, Chevr.

1. *Plagiodera Lownii*.

Subrotundata, modice convexa, dorso subdepressa, fulva, nitida;

antennis extrorsum verticeque nigris; elytris distincte punctatis, cupreis; metasterno abdominisque basi piceis.

Long. 3 lin.

Hab. Sydney. Collected by Mr. Lowne.

Head very short, epistome transverse, triangular, separated from the face by a grooved line, from the apex of which a deep impression extends upwards on the face, surface of forehead irregular; antennæ rather longer than the thorax, subfiliform. Thorax short, transverse, more than three times as broad as long, sides rounded and narrowed from base to apex; surface slightly impressed with three or four irregular ill-defined foveæ, general surface finely punctured. Elytra impressed with deep and distinct but not large punctures, placed irregularly over the whole surface; humeral callus slightly thickened, bounded within by a shallow groove, lateral border moderately dilated, separated from the disc by a shallow depression.

This species, collected by Mr. Lowne in the neighbourhood of Sydney, is, I believe, the first *Plagiodera* received from Australia; the insects belonging to this genus have a very extensive range, being found more or less abundantly in all quarters of the globe.

Genus Adorium, Fabr.

1. *Adorium Bowringii.*

Ovatum, convexum, pallide flavum, nitidum; tarsis, tibiarum apice, antennarumque articulis ultimis quatuor, nigris; elytris cæruleis, albo-flavo limbatis (limbo basali fere obsoleto).

Long. 6 lin.

Hab. Hong Kong.

Ovate, very convex, pale flavous, nitidous; antennæ robust, filiform, four-fifths the length of the body, four apical joints black. Thorax transverse, sides broadly rounded at the base, obliquely narrowed towards their apex. Scutellum trigonate, its apex rounded. Elytra distinctly but finely punctured, bright metallic blue, each elytron bordered by a band of pale yellowish-white, which is however interrupted and nearly obsolete on the basal margin. Extreme apex of the tibiæ, together with the tarsi, black.

This lovely species, perhaps the most beautiful in the genus, is distinguished readily from its congeners by its peculiar colouring.

Genus Aplosonyx, Chevr.

1. *Aplosonyx elongata.*

Elongata, parallela, convexa, fulva, nitida; tibiis extrorsum, tarsis, antennarumque articulis intermediis, nigris; elytris viridi-cæruleis, tenuiter punctato-striatis, punctis in striis confuse bifariam dispositis.

Long. 6—9 lin.

Hab. Northern India.

Elongate, parallel, convex, shining fulvous. Head prominent, face oblong, forehead impressed with a crucial line; antennæ more than two-thirds the length of the body, tapering towards their extremity, four basal joints fulvous, glabrous, last three obscure fusco-fulvous, the rest black; apex of jaws black. Thorax nearly twice as broad as long, sides deeply sinuate, rotundate-dilatate in front, upper surface deeply excavated across the middle, furnished in front with four obtuse tubercles, placed transversely at some distance behind the apical margin, the two intermediate less distinct and united by a transverse ridge; surface nearly impunctate, with the exception of five deep punctures placed in a group on either side the centre of the transverse groove. Scutellum elongate-trigonate, obtuse. Elytra metallic greenish-blue, oblong-elongate, sides parallel, apex rounded, shoulders prominent and elevated into an oblique ridge; on the inner side of the latter is a deeply-grooved line, which, in conjunction with the usual transverse depression below the basilar space, and a faint longitudinal groove on the inner edge of the suture, bounds on each elytron a slightly elevated oval space; each elytron with ten finely punctured striæ, each stria formed by a double row of punctures, more or less regularly placed along the line; at the base, near the scutellum, and also on the middle of the hinder disc, the puncturing is much more confused and the striæ are nearly lost.

The different punctation of the elytra, together with the tuberculate thorax, separate this insect from all other concolorous species of the genus.

XLIX. *Descriptions of some new Species of Exotic Longicorn Beetles.* By J. O. Westwood, Esq., M.A., F.L.S., Hopeian Professor of Zoology in the University of Oxford.

[Read 7th Sept., 1863.]

I scarcely think any apology will be needed in offering to this Society the descriptions and figures of a few isolated species of Longicorn beetles, when their extreme beauty is taken into consideration. The objection to the publication of such isolated descriptions arises from the difficulty of referring each species to its legitimate position, and of keeping it fixed in the mind of the student of the family, which is scarcely likely to be the case when a few words or even a few lines of description, often unaccompanied by any comparative observations or critical remarks, are only given. When, however, careful figures are added, the facilities for reference and the difficulty of obliterating from the mind the knowledge thereby imparted, especially when the species are remarkable, are so greatly increased as to render the publication of such descriptions and figures beneficial rather than detrimental to the progress of science.

Genus Zygocera, Dej. Cat. 3rd ed., p. 344, sine descr. (nec Thomson, Classif. des Longicornes, p. 111, cum descr.)

This genus was first proposed, without any characters being assigned to it, by the Baron Dejean in the third edition of his Catalogue, upon a single species. Mr. Thomson has adopted the generic name in his Archives Entomologiques, i. p. 189, but has described two other species from Australia and Java, one of which, in his work on the Longicornes (p. 111), he regards as the type of the genus, which he consequently claims as his own. It happens, however, that the descriptions of these two insects do not agree with the type originally proposed, wanting the peculiar sexual character afforded by the antennæ of that species, whence the generic name was proposed, namely, the tuft of black hairs at the extremity of the very long third joint of the antennæ in the males, which tuft is not present in the female. In fact Mr. Thomson's two species belong to the previously described genus

Callipyrga of Newman; so that strictly speaking the genus *Zygocera* still remains uncharacterized. The following are its most prominent features :—

Hypselonoto affine. Caput angustum, oculis haud prominulis. Antennæ ad basin valde approximatæ, 11-articulatæ, articulo 3tio in masculis (saltem speciei typicalis) longissimo et ad apicem fasciculato. Prothorax conicus, capite multo latior, ad basin constrictus, dorso tuberculatus lateribusque versus basin utrinque unispinosis. Elytra ad basin prothorace multo latiora, convexa, singulo inter scutellum et humeros tuberculo erecto armata et ad apicem oblique truncata. Pedes mediocres.

Sp. 1. *Zygocera pruinosa*, MacL. MS., Dej. Cat., l. c.; Boisd. Faune de l'Océan. p. 489 (*Acanthocinus* p.)
Plocamocera leucosticta, Hope, MS., in Mus. Oxon. (Plate XXV. fig. 6.)

Nigra, nitida; elytris nitore metallico parum ornatis; pronoto et elytris punctulis albis numerosissimis, striga tenuissima transversa submediana alteraque subapicali albo-squamosis; antennis maris ad apicem articuli 3tii elongati fasciculo nigro setarum instructis; pronoti lateribus utrinque in tuberculum conicum, versus basin, discoque tuberculis tribus transverse positis armatis; elytris etiam inter scutellum et humeros tuberculo conico elevato munitis.

Long. corp. maris lin. $9\frac{1}{2}$; latitud. ad basin elytrorum lin. $3\frac{1}{2}$; long. antenn. maris lin. 11. Fœmina paullo minor.

Habitat in Nova Hollandia. In Mus. Hopeiano Oxoniæ.

I believe that no detailed description, beyond Boisduval's diagnosis of seventeen words, has hitherto been published of this species, which is the only one referred to by Dejean in his Catalogue.

The face, which is black and shining, is marked with two fine white lines, extending from the sides of the clypeus to the bases of the antennæ; another white line extends from the base of the mandibles to the back of the eyes, and the front margin of the prothorax is also marked with a still finer white line. The eyes are kidney-shaped, but the upper division is very small. The antennæ are black, slightly varied with whitish, the fourth joint being most conspicuously marked with a broad band of this colour. The fascicle of hairs at the extremity of the long third joint in the male is black. The two lateral tubercles near the base of the prothorax, together with the three on the disc, form a transverse series. The scutellum is small, triangular, and rounded at its

extremity. Each of the elytra in both sexes is armed with a large erect tubercle at its base between the scutellum and shoulders. Across the middle of the elytra runs a very slender white line in a slightly slanting direction; the minute white dots also coalesce towards the extremity of the elytra to form another somewhat arched white line; the extremity of these organs is obliquely truncate. The body beneath is black and shining, the metasternum very convex, with two diverging white lines, and the four basal segments of the abdomen are marked on each side with a patch of white pile. The legs are dark grey, the tibiæ having the extremities broadly black.

Sp. 2. *Zygocera metallica*, Westw. (Plate XXV, fig. 7.)

Nigra, nitida; elytris purpureo-nitentibus, sutura virescente, faciei lateribus albido tenuiter lineatis; prothorace utrinque spinoso, discoque tuberculis duobus conicis elevatis; elytris versus basin rude punctatis et nigro-hirtis, singulis tuberculo elevato prope scutellum armatis, apiceque subtruncatis.

Long. corp. lin. $7\frac{1}{2}$; lat. ad basin elytr. lin. $3\frac{1}{4}$.

Habitat in Australia meridionali. D. Angas.

In Mus. Hopeiano Oxoniæ et D. Pascoe.

The antennæ are of moderate length, their underside (except in the basal joint) is clothed with a few long black hairs; the third joint is but little longer than the fourth. The tubercles on which the antennæ are fixed are elevated, much broader than the base of the antennæ, and closely approximating in the middle of the front of the face. The head is small, the face widened towards the mandibles, with two very slender parallel whitish lines extending from the sides of the clypeus to the base of the antennæ. Behind the middle of the prothorax the sides are armed with two strong diverging conical spines, obtuse at the tips, and in the transverse line between them are two elevated tubercles on the disc, and two others much more minute and close together in the middle. The elytra are very glossy and of a fine purple tint, the suture elevated and green; the base of each is armed with a large elevated tubercle close to the scutellum; they are rudely punctured in the basal portion, where they are also sparingly clothed with erect black hairs. They are slightly truncated at the extremity. The body beneath is glossy black, as is also the underside of the femora.

Two specimens of this species were collected by Mr. Angas, recently returned from South Australia. Both of these specimens agree with the female of *Z. pruinosa* in the comparative shortness of the antennæ, and in the want of the tuft of hair at the extremity of the third joint, which is but little longer than the two preceding

joints taken together. The extreme base of each elytron, close to the scutellum, is armed with a conical tubercle, and the extreme apex is slightly truncated.

Other species of *Zygocera* are described by Erichson (Wiegm. Arch. 1842), and Pascoe (*ante*, pp. 541, 542).

Genus Abryna.

This genus was first indicated as "genus novum?" by Mr. Newman in the Entomologist, p. 289.* In the few characters assigned to the genus, we find the eyes described as "ad antennarum basin fere divisi," whereas they are widely divided apart in a specimen of the type

Sp. 1. *Abryna cœnosa*, Newm.† (Pl. XXV. fig. 3),

in the Hopeian collection, the narrow ridge behind the base of the antennæ, forming in fact the edge of the excavation in which the rotula of the antennæ works, being quite destitute of facets; the elytra are also said to be "apice trunctata, truncatura concava," which is indeed the case with the type specimen in the British Museum, which is evidently a large male, but in the specimen of *A. cœnosa* before me the truncation is even slightly convex. The peculiar character of the tuberculated anterior angles of the prothorax is found in

Sp. 2. *Abryna fausta*, Newm.‡ (Pl. XXV. fig. 4),

in which the elytra are glossy purplish blue; but here, as described by Mr. Newman, these organs are "apice rotundata," disagreeing

* "Genus novum? Antennæ valde distantes, corpore vix breviores, articulus 3us 1mo longior, cæteri pedetentim breviores, graciliores, ultimus rectus; facies latissime infra oculos dilatata, longitudinaliter carinata, oculi ad antennarum basin fere divisi; prothorax fere cylindraceus, dorso pustulis punctisque nonnullis notatus, lateribus dentibus binis anticis armatus, dens superior obtusus, inferior subacutus; elytra prothorace paullo latiora, parallela, undique puncta, apice truncata, truncatura concava; pedes breves validi, meso- et meta tibiis apice externo dense hirsutis, tarsis dilatatis." Newman, l. c.

† "Fusca, obscure cinereo-varia, præcipue fasciis elytrorum binis latis undatis. Corp. long. ·7—1 unc.; lat. ·275—·4 unc." Newman, op. cit. p. 289.

‡ "Antennæ valde distantes, graciles, dimidio corporis longiores, articulus 1mus nigro-chalybeus, cæteri ferruginei, apicem versus obscuriores; caput nigrum chalybeo-tinctum, facies asperè puncta; oculi ad antennarum basin divisi; prothorax nigro-chalybeus, punctus, dorso lævis, lateribus dentibus 2 minutis anticis armatus; elytra prothorace latiora, lateribus parallela, puncta, nitida, chalybeo pulcherrime gaudentia, apice rotundata; pedes breves, nigri, fulgore metallico passim gaudentes, meso- et meta-tibiæ apice extus dense hirsutæ ferrugineæ. Corp. long. ·75 unc.; lat. ·25 unc." Newman, op. cit. p. 289.

with the generic type, whilst in the splendid species which he described under the name of

Sp. 3. *Abryna eximia*, Newm., Entom. p. 298.*
Westw. Cab. Orient. Ent. pl. 29, fig. 5.
(Pl. XXIV. fig. 1, 2, 6; Pl. XXV. fig. 1),

the prothorax is destitute of the conical tubercles at its anterior angles, and the elytra are quite rounded at the tips. I have given in Plate XXIV. fig. 6, a figure of one of the elytra, seen obliquely, of the type specimen of this beautiful insect in the collection of the British Museum, in order to show the differences existing between it and several other specimens which I dare not regard as distinct species, but which it will be interesting to describe and illustrate with reference to the question as to the extent of variation to which a species may be subject.

Of these individuals Plate XXIV. fig. 2, represents a splendid insect of this genus in the collection belonging to Mr. Semper of Altona (taken by his brother at Casiguran, near Luzon, in the middle of June), which differs from the British Museum type of *A. eximia* in having shorter and more convex elytra, the pronotum strongly punctured (whereas it is nearly smooth in the British Museum specimen), the antennæ considerably longer (which would indicate the male sex), whereas the mandibles are not so large and flat as in the other individual (which we might regard as indicating a female).

The green colour in Mr. Semper's insect is much more tinged with steel-blue, whereas it is tinged with yellow in the Museum spe-

* "Viridi-ænea, splendida, fulgore metallico mutante omnino læta, maculisque impressis lanuginosis albis pulcherrime ornata; antennæ basi distantes, dimidio corporis longiores, articulus 1us nigro-chalybeus, cæteri nigricantes, fulgore metallico paullo gaudentes, 3tio 4toque exceptis basi cano-lanuginosi; oculi ad antennarum basin divisi; mandibulæ validæ, armatæ, nigræ: caput punctum, epicranii facieique carina longitudinalis vix elevata nigra, faciei quoque macula oblonga alba mediana, carinâ longitudinaliter divisa, genarum altera transversa linearis, alteraque pone orem subquadrata; prothorax fere cylindraceus, dorso æqualis, lateribus ante medium paullo gibbus, margine postico rectus, glaber, utrinque maculis 4 albis signatus; scutellum læve nigricans: elytra prothorace paullo latiora, basi puncta, maculis 18 ornata, harum utriusque elytri 4 basin versus sitæ, 1ma fere suturalis, subscutellaris, oblonga, 2da rotunda discoidalis, 3tia linearis, oblique lateralis fere humeralis, 4ta parva subrotunda, inter 1mam ac 3am sita; apicem versus utriusque elytri 5, 1ma et 2da arcuatæ lineares circulum fere formantes, alteras 3 parvas includentes: pedes mediocres paullo obscuriores, tarsis extus apice hirsutis nigris. Long. corp. ·8 unc. lat. ·3 unc." Newman, op. cit. p. 298.

cimen, in which also the mandibles are black. It will, moreover, be seen that the peculiar shape of the markings does not accord with that of the Museum type, although their general arrangement is nearly similar.

Another splendid variety of *Abryna eximia* is represented in Plate XXIV., fig. 1. It was recently received for the Hopeian Museum from Herr Dohrn, as a native of the Philippine Islands, and is remarkable for its rich coppery purple colour, as well as for the variation in the arrangement of the white markings upon its elytra, which are represented enlarged in the detached figure, 1 *a*, seen obliquely, showing that the narrow wavy line beyond the middle of the elytra is nearly transverse. The markings also of the underside of the meso- and meta-thorax are composed of fulvous pile, whereas in Mr. Semper's variety they are white.

A fourth variety from Manilla is also contained in the Hopeian Museum, and is of a black colour, with a chalybeous and purple tinge most evident upon the elytra, and in which the white marks beyond the middle of those organs almost form a regularly curved arch. The specimen has been taken out of spirits of wine, and probably now exhibits but a small portion of its real brilliancy; it is represented in Plate XXV. fig. 1.

Sp. 4. *Abryna Semperi*, Westw. (Pl. XXIV. fig. 3.)

Niger, subnitidus, albo luteoque varius; elytris purpureo vix tinctis, capite et pronoto punctatissimis; elytris basi rude, apice subtiliter punctatis; prothorace subquadrato, versus angulos anticos subbituberculato; elytris magis regulariter ovatis; antennarum articulis intermediis basi albidis.

Long. corp. lin. 8; lat. med. elytr. lin. $3\frac{1}{2}$.

Habitat Angat, med. Insulæ Luzon: med. Maii: D. Semper. In Mus. D. Semperi, Altonæ.

This species, of which I have only seen a unique individual, although closely agreeing with *A. eximia* in the peculiar markings of its elytra, is distinguished by its considerably more bulky form, and shorter prothorax, head, antennæ and legs. The head is of moderate size, black, rugose, scarcely shining, marked on the middle of the face with an oblong spot of buff pile; there is also a spot of white pile behind the base of each antenna. These organs are of moderate length, the middle joints, especially the fourth, having the basal half clothed above with white hairs. The prothorax is black and rugose, subquadrate in form, slightly constricted across its front, with two small tubercles on each side near its anterior angles, which are marked with a transverse buff-

coloured patch of pile, the lateral extremity of which is connected with a smaller longitudinal patch of the same colour. The elytra are swollen and obovate, not constricted behind the shoulders. They are glossy and of a black colour, but tinged with blue and purple, especially at the sides and towards the apex. Each bears a large lunate humeral and three other white spots, rounded or ovate at the base, and beyond the middle a narrow transverse and slightly waved fulvous fascia, dilated and bent backwards at each end; another oblong hastate spot runs parallel to the suture, and a curved one near the outer apex; these three last-mentioned markings form an irregular oval space, within which is a smaller oval fulvous spot, and the apex is powdered with fulvous scales. The prosternum is clothed with dirty white hairs, and the pro- meso- and meta-epimera, as well as the sides of the abdominal segments, except the last, are clothed with large patches of fulvous pile. The last abdominal segment has two large lateral patches of dirty white pile. It is naked in the middle, which is marked with a longitudinal impression.

Sp. 5. *Abryna Newmanni*, Westw. (Pl. XXV. fig. 5.)

Elongata, subcylindrica; antennis brevioribus, prothorace inermi; nigra, nitida; elytris æneo vix tinctis, punctatis, apice rotundatis.

Long corp. lin. 10; lat. bas. elytr. lin. $3\frac{1}{3}$.

Habitat Manilla. D. Cuming. In Mus. Hopeiano Oxoniæ.

The elongated form of this species, with the prothorax destitute of lateral tubercles, the subcylindrical elytra and the dark colour of the insect, destitute of any spots or other markings, will at once distinguish it from others of the group. The head is of moderate size, the mandibles robust, the face marked with a slightly raised central line, extending to the level of the base of the antennæ; the antennæ moderately short, the third joint rather longer than the first and fourth, the fifth and following short and gradually decreasing to the tips. The prothorax is subquadrate, slightly narrowed across its front margin, and with a fine constriction or impressed line in front of the posterior margin; the disc, except down the centre, is punctured, the punctures near the sides being strongest and occasionally running transversely together. The elytra are subcylindrical, elongated and regularly rounded at the extremities; they are black and glossy, with a slight æneous tinge, especially towards the base, which is much more strongly punctured than any other part of the body; beyond the middle of these organs, towards the outer margin, and also

near the tip on the same margin, are rudiments of two small patches of pale coloured pile. The legs are black and of moderate length, and the underside of the body is black and glossy, the fifth abdominal segment bearing a central longitudinal impression.

Sp. 6. *Abryna notha*, Newman.* (Pl. XXV, fig. 2.)

With the view of rendering my illustrations of this genus more complete, I have added a figure of this species, from the type in the British Museum collection.

It is a subcylindrical form, the elytra being about twice as long again as they are broad. The antennæ are black, with the third and fourth joints red brown; the prothorax black, with a greenish tinge, and armed with two tubercles on each side near the fore angles; the elytra are purplish blue and glossy, and the middle and posterior tibiæ clothed with aureous pubescence.

Genus Acronia,† Westw.

Genus novum *Niphonæ*, *Stheniadi* et præsertim *Eudesmo* affine, differt imprimis antennarum brevitate, prothorace inermi, corporeque metallico.

Corpus subcylindricum, pedibus subbrevioribus. Caput prothoraci latitudine fere æquale; facie quadrata, fere plana. Antennæ ad basin longe distantes, lateribus capitis excavatione intra-oculari infixæ, vix prothorace longiores; articulo 1mo

* "Antennæ læves, distantes, facies lata, punctis magnis aspera, oculi ad antennarum basin divisi, prothorax punctus, punctis magnis conspicuis, lateribus tubere antico armatus; elytra lateribus convexa, apice rotundata, puncta, punctis basin versus magnis, apicem versus minutis, meso- et meta-tibiæ extus apice dense hirsutæ aureæ; nigra, fulgore chalybeo obsolete tincta, meso- et meta-pleura albida, segmentorum abdominis 1mum semialbidum. Corp. long. ·65 unc.; lat. ·225 unc." Newman, op. cit. p. 290.

Mr. Newman has added another species of *Abryna*, differing somewhat in form from any of the preceding species, under the name of (*Abryna*) *comosa*, Newman, Entomologist, p. 323.

"Antennæ corpore breviores, subfuscæ, graciles, basi distantes; oculi ad antennarum basin divisi, facies dense comosa, obscure ochracea, epicranium ochraceo fuscoque varium; prothorax capite latior, lateribus fere rectus, dentibus 2 anticis armatus, quarum antica minuta margine ipso sita, fusco-cinereus, margine postico rectus; elytra prothorace latiora basi subpustulosa, apice rotundata, cinerea, apicem versus strigis nonnullis obliquis fuscis ornata; pedes mediocres; propedes cæteris longiores, fortiores; femoribus tumidis, meso-tibiis vix emarginatis. Corp. long. ·45 unc.; lat. ·2 unc."

† Ἀκρωνία, partium extremarum (*i.e.*, antennarum) amputatio.

brevi clavato, 2do minuto, 3tio longo apice clavato, 4to fere 3tii dimidii longitudine, reliquis 7 brevissimis. Prothorax inermis, convexus, lævis; lateribus prope angulos anticos linea impressa transversa constrictus, constrictione altera postica, angulis posticis lateralibus prothoracis retro productis, emarginaturæ humerali elytrorum insidentibus. Elytra subcylindrica basi subgibbosa, disco pone medium convexo, apicibus sub lente paullo truncatis. Pedes breves. Coxæ anticæ globosæ; tibiæ 4 posticæ extus pone medium setosæ, et singulariter oblique striolatæ.

Sp. 1. *Acronia perelegans*, Westw. (Pl. XXIV. fig. 4.)

Nigra, nitidissima; capite et prothorace cyaneo-tinctis, elytris aureo-viridescentibus fulvo albidoque variegatis, antennis nigris, albo-biannulatis; corpore infra cyaneo-nigro fulvo-notato.

Long. corp. lin. 9; lat. elytr. ad basin, lin. 3.

Habitat Casiguran, prope Luzon: med. Junii: D. Semper.

In Mus. Semperi, Altonæ.

The head is black, slightly tinged with purple, almost impunctate, with a small longitudinal impressed line in the middle of the crown; the face bears two oval spots between the antennæ, two other similar spots behind the lower part of the eyes, and an interrupted fulvous line across the lower part of the face; the lip and mandibles are black, the antennæ are velvety and black (except the polished basal joint), the third and fourth joints being marked with a large patch of white pile; the prothorax is black, with a purple gloss, smooth and almost impunctate, with a small round spot near each anterior angle, and a larger transverse one near the hind angles, which latter are produced into a small lobe extending backwards, and received into an emargination near the shoulders of the elytra. The elytra are golden-green, under a lens very delicately chagreened and punctate; near the shoulders they are elevated, and clothed with black velvet-like pile; there is also another transverse patch of the same clothing beyond the middle, the disc beneath the pile being of a bluer tint; at the base the elytra are marked with six fulvous spots, the four middle ones being pointed behind; beyond these is an interrupted fascia of small paler fulvous spots, followed by a slender whitish line running parallel with the suture, and with its extremity incurved towards the disc of each elytron, and almost continuous with a transverse fulvous band extending inwards from the lateral margin; beyond these is a large fulvous y-like mark, the lower

end of which is recurved. The underside of the body is black, varied with purple, brassy and golden tints, the sides of the pro- meso- and meta-sterna and abdominal segments clothed with large fulvous patches; the prosternal point is also fulvous, except at its deflexed obtuse extremity. The legs are black, with a purple gloss; the four posterior tibiæ with a coat of short black hairs on the outer edge beyond the middle, the surface of this part of these limbs being marked with a remarkable series of fine oblique striæ.

I have only seen a single specimen of this very beautiful and singular Longicorn in the rich collection of Philippine insects collected by Mr. Semper, and now in the possession of his brother, G. Semper, Esq., of Altona, to whom my thanks are especially due for entrusting me with the loan of this and several other equally interesting unique insects.

Genus Lamia.

Lamia ocellifera, Westw. (Pl. XXIV. fig. 5.)

Nigra, subnitida, subglabra; elytris punctatis, prothorace et elytris maculis rotundatis (interdum strias undulatas formantibus) albis, medio fulvis; antennis corporis longitudine nigris, albo-annulatis, prothorace inermi.

Long. corp. lin. 8; lat. elytr. ad basin lin. 3.

Habitat ad ripas flum. Ilagon, ins. Luzon: mense Julio: D. Semper.

In Mus. Semperi, Altonæ.

Subdepressed; moderately shining, head and thorax almost impunctate, the elytra strongly punctured at the base. The head is black, with two fulvous spots on the face, and two larger ones behind the antennæ; the antennæ are inserted far apart at the lateral anterior angles of the head, the face is quadrate, the lip and mandibles black; the antennæ are about the length of the body, with the intermediate joints clothed with white hairs at the base; the prothorax is transverse, convex, the sides destitute of spines, the anterior margin slightly narrowed, and the posterior margin finely constricted; on each side is an irregular circle of white pile, and in the middle, near the hind margin, are two oval white spots. The elytra are much wider than the prothorax at their base, the shoulders being produced into a rounded prominent angle, from which the elytra gradually become narrowed to the tips; they are marked with a number of small, generally round, white spots, the middle of which is generally fulvous; those

near the middle of the elytra coalesce and form a waved fascia; two others, on the disc beyond the middle, also unite so as to form an oblique bipartite patch; some of these spots extend across the inflexed lateral margin of the elytra. The under surface of the body is black and glossy; the sides of the pro- meso- and meta-sterna and of the abdominal segments marked with fulvous spots. The legs are short, strong and black; the lobes of the third joint and the base of the claw joint of the tarsi are clothed with white hairs; there is also an irregular white patch on the outside of each femur.

I should have wished to refer this insect to one of the host of subgenera found in the subfamily of which *Lamia* is the type, but the want of a satisfactory plan of distribution of the Longicorn *Coleoptera* renders such an attempt almost impossible. The work of a master-mind like that of Lacordaire can alone reduce these subgenerical sections to their true rank and position. I have made the attempt in vain with the work of Mr. Thomson, but have been thwarted by the illogical nature of even his primary sections. These, in the first tribe, *Lamiitæ*, are thus arranged:—*

I.	Acetabula antica integra.
A.	Acetabula antica rotundata (*Acanthoderitæ*).
AA.	Acetabula antica vel rotundata, vel extus angulata (*Dorcadionitæ*).
AAA.	Acetabula antica extus angulata (*Lamiitæ* veræ).
I*a*.	Acetabula antica subintegra (*Monochamitæ*).
I*aa*.	Acetabula antica integra (*Gnomitæ*).
II.	Acetabula antica valde hiantia (*Methiitæ*).

I must confess that such a style of tabulation is beyond my comprehension.

* Essai d'une Classif. de la Famille des Cerambycides, pp. 2, 3, 4.

DESCRIPTION OF THE PLATES.

Plate XXIV.

Fig. 1. *Abryna eximia*, var. *cuprea;* Mus. Oxon.; 1 *a*, elytron seen obliquely.
2. ——————, var. *viridis;* Coll. Semper; 2 *a*, elytron, ditto.
3. —— *Semperi*, Westw.; 3 *a*, tubercles at side of prothorax.
4. *Acronia perelegans*, Westw.; 4 *a*, head in front; 4 *b*, eye and base of antenna; 4 *c*, ditto, sideways; 4 *d*, antenna; 4 *e*, sterna, side; 4 *f*, ditto, beneath.
5. *Lamia ocellifera*, Westw.; 5 *a*, head in front; 5 *b*, pro- and meso-sterna; 5 *c*, ditto, sideways.
6. *Abryna eximia*, elytron seen obliquely, Brit. Mus., type specimen.

Plate XXV.

Fig. 1. *Abryna eximia*, var. *purpureo-nigricans;* Mus. Oxon.; 1 *b*, elytron seen obliquely.
2. —— *notha*, Newm.
3. —— *cœnosa*, Newm.; 3 *a*, side of prothorax; 3 *b*, sterna from beneath.
4. —— *fausta*, Newm.
5. —— *Newmanni*, Westw.
6. *Zygocera pruinosa*, male; 6 *a*, head in front; 6 *b*, sideways, ♀.
7. —— —— *metallica*, Westw.

L. *On the European Species of the Genus* Cosmopteryx.

By H. T. Stainton, Esq., F.L.S., F.G.S.

[Read 2nd November, 1863.]

The genus *Cosmopteryx* contains some of the most beautiful and elegant species amongst the *Tineina*. I am now acquainted with six European species, three of which occur in this country. Of three species the larvæ are already known, and I conceive that we may also claim acquaintance with the larva of a fourth species; two larvæ, however, have yet to be discovered.

Three years ago I published a few observations on the species of this genus in the eighth volume of "The Entomologist's Weekly Intelligencer," pp. 196—199, but deferred going at that time as fully into the subject as I could have wished.

The earliest description which we can refer to this genus is that given by Fabricius in 1775, in his "Systema Entomologiæ," p. 666, of *Tinea Drurella*.

"Tinea alis fusco-argenteis: fascia postica aurea.

Habitat Hafniæ.

Magnitudo *T. Rœsellæ*. Antennæ elongatæ longitudine corporis, nigræ, apice albæ. Caput, thorax basisque alarum fusco-argentea. Postice fascia lata, aurea, quæ utrinque striga argentea vivaciore terminatur."

This description is repeated verbatim in the "Entomologia Systematica," iii. 2, p. 327, and is copied by Villers in his "Entomologia Faunæ Suecicæ descriptionibus aucta," ii. p. 502, but was unnoticed by subsequent authors till the year 1850, when Zeller called attention to it in the Stettin "Entomologische Zeitung."

The species of the genus now known are so very closely allied that it is quite impossible to say which species Fabricius had before him.

About the year 1816, Hübner figured, in his "Sammlung Europäischer Schmetterlinge," a species of this genus under the name of *Tinea Zieglerella*, fig. 306; no reference to this figure occurs till the year 1839, in Zeller's "Attempt at a Systematic

Classification of the Tineidæ" in Oken's "Isis." Hübner's figure cannot be referred with certainty to any of our present species.

Haworth, in the fourth part of his "Lepidoptera Britannica," published in 1829, described one of this genus under the name of *Gracillaria Eximia*, at page 532, thus—

"G. (The Nonpareil) alis anticis aurantio, aureo, cupreo, atro, violaceoque variis splendidissimis.

Habitat in Sepimentis prope Londinum, at rarissime.

Expansio alarum 5 lin.

Descriptio. Species formosissima. Alæ anticæ nitidissimæ, basi fasciâ latissimâ mutabili, nunc aureâ nunc atrâ, et atro alte terminatâ. Tunc in medio fascia trigona latior ad costam, saturatissimè aurantia, solidissima, utraque marginata strigâ tenui atrâ, et fasciolâ mutabili, nunc latissimè aureâ, cupreâ, rubro-cupreâ, violaceâve. Pone has alæ aterrimæ, striâ splendidissimâ, mutabili, marginis tenuioris, usque ad apicem, nunc cæruleo-argenteâ, violaceâ, vel auro-violascente, ciliis profundis nigris. Posticæ fuscæ, nitidæ, ciliis profundissimis fuscis."

Haworth certainly appears to have been enraptured with the insect he was describing; but it is impossible to decide, from the above description, to which species it should be restricted. He says that the base of the anterior wings has "a very broad changeable fascia, now gold, now black," which does not agree with any known species; and of the apical streak he says it goes from the inner margin to the apex, which, if rigorously interpreted, must be held to imply an uninterrupted streak.

Up to the year 1860 but one species was known in our collections as the *Eximia* of Haworth, but in 1860 another closely-allied species was detected in the collections of Mr. Brown and Mr. Farren, and in that of the British Museum. We have, however, no record that any of these specimens occurred near London; and as the species most generally known to British collectors occurs freely in several localities round London, it seems natural to conclude, that that is in fact the *Eximia* of Haworth.

In 1834, Stephens, in his "Illustrations" (Haust. iv. 273) copied Haworth's diagnosis, and translated his description as follows:—

"Anterior wings very glossy; the base with a very broad, changeable fascia, in some directions of light golden, in others black, and terminated by a deep black margin; in the middle is a large, broader, trigonal, deep-bright-orange fascia, edged on each side with a narrow black streak, and a variable band, being either

golden, coppery, red-copper or violet, according to the light; behind this the wings are deep black, with a very brilliant changeable streak on the inner margin to the apex, varying from a silvery-blue to violet or a golden tint; cilia long and black; posterior wings fuscous, glossy, with paler opaque cilia."

And Stephens observes—"The above description of this most splendid insect is drawn up from 'Lepidoptera Britannica,' with slight alterations, to agree with the only known specimens;" adding, "I have seen two examples only of this truly beautiful species; one of them was in the collection of the late Mr. Haworth, and was taken near London; the other is in my own cabinet, having taken it in July, 1827, in Holme Wood Lane, near Ripley."

Zeller, in the "Isis" of 1839, p. 210, refers to Hübner's figure of *Zieglerella*, and says—"I took six specimens of this wonderfully beautiful species (very badly represented by Hübner) at Spitzberg, in June, in the evening, amongst raspberry bushes."

In 1844, Eversmann published his "Fauna Lepidopterologica Volgo-Uralensis," in which, at page 596, we find the following description:—

"*Œcophora Zieglerella*, Hübn. Palpi longissimi, gracilissimi, reflexi, æneo-fusci; antennæ breves, atræ, annulo lato apiceque albis; caput et thorax fusco-orichalcea, nitidissima;—alæ anticæ atræ, summa basi fasciaque basali orichalceis nitidissimis,—fascia externa lata aurantiaca, utrinque orichalceo-marginata;—posticæ nigricantes."

And he then proceeds to observe:—

"Gracilis et minuta, duplo minor præcedentibus. [The preceding species are *Brockella* and *Goedartella*.] Habitat in provinciæ Casanensis coryletis; volat Junio, ardente sole; in Coryli folio insidens perpetuo et celerrime in gyrum vertitur, tum evolat, et in alterum folium transvolans denuo circumagitur."

In this description no mention is made of the apical streak, and the "summa basi fasciaque basali orichalceis" would imply that the extreme base and a basal fascia were brassy—a phraseology which I cannot apply to any species with which I am acquainted.

Up to this period no author appears to have suspected that there might be several closely-allied species; and hence none of the descriptions have that extreme accuracy which we now find to be so necessary.

In the "Isis" of 1846, Zeller described, at page 298, a new species under the name of *Licnigiella;* this happens, at least at present, to be the most distinct species in the genus, and it is the first of which we have an accurate and detailed description. Looking, however, to the number of dark-coloured species with which we are acquainted, it is by no means improbable that we may yet find other closely-allied clay-coloured species.

Zeller's description is as follows:—

"Alis anterioribus nitidulis lutescentibus longitudinaliter albo lineatis, fascia postica aurantiaca, aureo-marginata, atroque maculata."

"This very beautiful insect was only once taken by Madame Lienig in the summer.

"It is rather larger than *Pedella*, and has the anterior wings as thin and pointed as in *Zieglerella*, the species to which it is most nearly allied. Head and thorax luteous, darker than the anterior wings; on the head are three slender white longitudinal lines, of which the two lateral ones run near the eyes to the antennæ, and the middle one also intersects the thorax. Antennæ brownish; the basal joint very long, with a club-like thickening at its end, and with a white longitudinal line on the anterior side. Face white. Palpi as long as the head and thorax together, thin, recurved, shining whitish, externally yellowish-brown; the second joint a little thickened at the apex, rather shorter than the terminal joint. Tongue scaled on the upper part. Legs silky, yellowish; the anterior beneath yellowish-brown. Posterior tibiæ rather thin, sparingly clothed with hairs, brownish before the apex, the apex whitish, with a tuft of whitish hair. Abdomen grey, with silvery-white scales on the sides of the segments; anal tuft yellowish; belly whitish.

"Anterior wings loam-yellow (luteous), with the inner margin narrowly white to the cilia. Along the costa a fine white line proceeds from the base, which soon after curves inwards, and has hardly one-fourth of the length of the wing. An equally slender, straight, white line, arising from the middle of the base, extends beyond it, and beneath the apex of the latter there is a small white longitudinal streak. In the middle of the wing is another narrow white streak on the costa. Beyond the middle of the wing two unequal shining golden lines enclose a pale orange-yellow fascia, which is a little expanded towards the costa; the first of these has on the fascia, above and below, a deep black dot. Not far beyond it there begins a rather thick white longitudinal line, which extends along the hinder marginal cilia to the tip of the

wing, and then to the end of the cilia; the costal cilia are white, otherwise the cilia are yellowish-grey.

"The grey posterior wings are even more slender than in *Pedella*.

"The underside is shining grey; the margins of the anterior wings are narrowly whitish (the costa at least from the middle), and these streaks become gradually broader, so that the apex of the wing is only intersected by a grey longitudinal streak."

This beautiful insect, so accurately described from a single specimen, was soon afterwards met with in our Cambridgeshire fens; and in the "Zoologist" of 1850, p. 2753, I remarked that "two specimens" were "in Mr. H. Doubleday's collection, taken at Yaxley in June," and quoted there the Zellerian description.

In the year 1850, Zeller described, in the Stettin "Entomologische Zeitung," p. 196, the insect for which, in the "Isis" of 1839, he had adopted the Hübnerian name of *Zieglerella*; he now assigned to it the older Fabrician name of *Drurella*, altering, however, the spelling to *Druryella*. This description, by far the most elaborate which had, up to that time, been given of any of the black species, was as follows:—

"Alis anticis atris, basi orichalcea, fascia media aurantiaca aurato-marginata, linea apicis cærulescenti argentea."

"This insect, decked with the most splendid colours, is very insufficiently represented by Hübner; his figure represents the wings much too broad, with the cilia too short, with a grey base to the anterior wings, with no metallic line in the apex of the wing, and with no shining golden border to the dark red fascia. Fabricius incorrectly styles the fascia golden and its border silvery; the "basis alarum fusco-argentea" shows that he meant the present species, and not *Scribaïella*. Head and thorax entirely metallic, dark bronze-coloured; antennæ thin and long, serrated towards the apex, with a long basal joint, thickened towards its apex; the antennæ are shining black, with the basal joint whitish beneath; the tips are white, and a little before the white tips are two white rings, first a broader one and then one more slender. Palpi long, thin, recurved, brownish-yellow, metallic; the second joint rather thickened at the apex; the terminal joint, which is more than half the length of the palpi, is finely pointed. Legs shining brown; posterior tibiæ externally spotted with silver; all the joints of the tarsi with their tips shining silver. Abdomen brown-grey, with the anal flap of the male grey, the belly whitish, with silvery

and golden lustre. Anterior wings narrow, deep black, with the entire base for a considerable breadth brassy, beyond which the black ground colour first appears as a broad fascia expanded towards the costa. In the middle of the wing is a golden transverse line, often with reddish lustre, as a border to a broad, dull, orange-red fascia, much expanded towards the costa, which is bordered externally by a similar transverse line, only that on the costa it changes to a snowy white. Both these edgings have between them and the fascia some black scales. Beyond, the ground colour is deep black up to the end of the cilia at the apex of the wing, in which runs a slightly curved, comparatively thick, metallic longitudinal line, shining with gold, silver, bluish or lilac. The blackish-grey cilia are paler towards the anal angle. Posterior wings very narrow, linear, a little broader at the base, grey, with long cilia. The entire underside brown-grey; the middle of the anterior wings is faintly reddish, and the costal cilia show a white blotch before the apex."

In this description we find the character furnished by the entire basal portion of the anterior wings being brassy very distinctly stated, but the form of the apical streak is not so decisively mentioned; it is not stated to run from the anal angle, nor are we informed whether it is entire or interrupted, whence, indeed, we should rather be disposed to conclude that it was entire.

As to the localities frequented by the insect, Zeller cites "Copenhagen (Fabricius), Westrogothia in Sweden (Zetterstedt), Dresden and Gorlitz (v. Tischer), Glatz (Zebe), and Spitzberg at the beginning of June, after sunset, sparingly amongst raspberry and hop-bushes." This last locality is the same as that given in the "Isis" of 1839, but at that time the hops were not mentioned. "Whether the *Zieglerella*, taken in Italy by Mann (who, before *Scribaïella* was specifically distinguished, included it under the former name) and the *Zieglerella* introduced by Kollar, in his 'Catalogue of South Austrian Lepidoptera,' p. 96, are identical with *Druryella* I cannot say, more probably they belong to *Cosmopteryx Scribaïella*, Heyden in lit."

Then follows a description of this new species, *Scribaïella*, the third known *Cosmopteryx*:—

"Alis anticis fuscis, ad basim striolis plumbeis, fascia media aurantiaca aurato-marginata, linea adhærente in apicem perducta aurata."

"Very similar to *Druryella*, rather larger, with the anterior wings

narrower. Thorax and upper part of the head dark brown, with very fine silvery lines. Face rather metallic grey. Palpi silvery-grey. Antennæ as in *Druryella*. Legs not so sharply spotted with white. Anterior wings only yellowish-brown, but very dark. The base not brassy, but of the ground colour; a very shining, slender, plumbeous line runs from the base along the costa, which, however, it soon quits; it is half as long as the distance between the base and the medial fascia; beneath its apex lies a similar, but much shorter, line, just above the fold, and beneath the latter, parallel to it, is a second. The medial fascia is less contracted towards the costa; its anterior margin has a deep black spot in the shining golden border; on its hinder margin the border is formed by two shining, golden, opposite spots, which come very close together, and are internally margined with black; the costal spot is whitish on the cilia. Between these spots in the middle of the wing is an orange-coloured prolongation (which is altogether wanting in *Druryella*), which is continued to the shining, silvery, longitudinal line. On the underside of the anterior wings there is a very faint whitish blotch in the costal cilia. The specimen described is a male, and was taken, with several others, in the Prater, at Vienna. *Cosmopteryx Lienigiella*, Z. ('Isis,' 1846, p. 298), is more nearly allied to this species than to *Druryella*."

In 1854 appeared my volume of the "Insecta Britannica:" in this I described our common black species under the Fabrician name of *Drurella*, quoting as synonyms the *Druryella* of Zeller, the *Zieglerella* of Hübner, and the *Eximia* of Haworth and Stephens, as, up to that time, no one apparently had suspected the existence of two black species. My description (p. 229) was as follows:—

"Alis anticis *atris, fascia obliqua argentea prope basim,* fascia recta in medio, fasciaque posteriore obliqua violaceo-argenteis, spatium triangulare saturate aurantium includentibus, strigulis duabus argenteis, altera supra angulum analem, altera in ipso apice.

"Exp. al. 4 lin.

"Head dark fuscous, metallic. Face and palpi rather silvery. Antennæ black, with a ring before the apex, and the apex white. Anterior wings *black, with an oblique silvery fascia near the base* (nearest the base on the costa), a nearly straight fascia in the middle, and an oblique fascia beyond the middle, silvery violet (this last fascia is nearest the base on the inner margin); the

triangular space included between these two fasciæ is deep orange, margined with black; above the anal angle is a short silvery streak, and another is in the extreme apex of the blackish cilia. Posterior wings blackish, with paler cilia."

I here indicated the two essential characters, though then little aware of their importance—the black base of the wing and the interrupted apical streak, forming two short streaks.

With reference to its localities and habits, I observed:—

"It has occurred in some plenty in several localities near London in July; it was reputed to frequent a willow tree at Hackney, probably because some hops grew in the vicinity. The larvæ of none of the genus are *known*, but the larva of *Drurella* is pretty strongly suspected; it mines in the leaves of the hop in September, when full fed quitting the leaf and forming a fine white cocoon, within which the larva remains unchanged during the winter; hence the perfect insect is difficult to rear. Mr. Douglas had collected a number of these larvæ in the autumn of 1852, but many escaped from his breeding-cage and the remainder died; in the following July he found a specimen of the perfect insect on the window of the room where he had kept his larvæ. Subsequently Mr. Wing discovered some of the perfect insect (not previously known to occur in this locality) by beating the hop plant, the leaves of which had furnished the mining larvæ the previous autumn. I therefore *conclude* that these miners are the larvæ of *Drurella*, but that they are so is not yet proved."

The description I gave at the same time of *Lienigiella* is defective in one or two points; this it is important to notice, lest these defects should lead to the suspicion that my insect was distinct from the *Lienigiella* of Zeller. I perceive that I have omitted to mention the very short and slender white streak which lies below the fold beneath the apex of the streak which proceeds from the middle of the base, and I have omitted to notice the pale orange colour of the medial fascia, which is distinctly different from the ground colour of the wing; the definition, moreover, of its markings, as "five small leaden silvery spots placed almost in a circle," is a definition that does not satisfy me now.

Herrich-Schäffer, in his "Schmetterlinge von Europa," figures two species—998, *Scribaïella*, and 999, *Druryella;* the latter is clearly shown with the base of the anterior wings black and the apical streak interrupted.

In the text he says, v. p. 284—

"Anterior wings blackish, with a medial orange fascia, which

is narrower on the inner margin, and bordered on both sides with golden.

" 866. Druryella. Sppl. 999.

" An oblique bronzy golden fascia at one-fourth of the length of the wing, in the apex of the wing at the place of the anal angle a white spot.

" One specimen from Professor Frey differs in this respect, that the white spot at the apex of the wing is first brassy-yellow, then purple-silver, and is continued along the margin nearly to the hinder golden transverse line; the abdomen is above ochreous-yellow.

" Tolerably distributed; but scarce. Near Zürich, June, July. The larva mines in *Vicia Sepium*, and changes to pupa in the earth."

" 867. Scribaïella. Sppl. 998.

" From the base of the anterior wings three silvery golden parallel lines, the orange medial fascia emits a line through the hinder golden margin.

" Near Vienna and Frankfort-on-the-Main.

" Midway between this and the preceding species stands a specimen which I took, at the end of June, near Ratisbon, in a hollow way facing north. It is of the size and form of *Druryella*, but the entire basal third of the anterior wings is leaden-silvery, obliquely terminated. From the apex of the wing a similar line runs along the margin towards the medial fascia."

We find here indications of four species—

1°. The described and figured *Druryella* is our English hop-feeder.

2°. The specimen from Professor Frey, with the apical streak continuous, and the larva feeding on *Vicia Sepium*, is a new species then first noticed; it was subsequently fully described by Frey under the name of *Schmidiella*.

3°. The described and figured *Scribaïella*—quite identical with the *Scribaïella* of Zeller.

4°. The specimen taken near Ratisbon, with the basal third of the wing leaden-silvery, and with a continuous apical streak. Whether by " leaden-silvery" is meant the same colour which most writers on this group have termed " brassy," seems doubtful; should these expressions mean the same thing, this fourth species would appear identical with the *Druryella* of Zeller.

In 1856 was published Frey's "Tineen und Pterophoren der Schweiz," which contains a valuable contribution to our knowledge of these insects. In the first place, he gives us an elaborate description of the new species *Schmidiella*, with the history of its larva; and, in the second place, he points out in a note wherein it differs from the *Druryella* of Zeller and from my own *Drurella*, and also wherein these two differ from each other.

Frey's description of *Schmidiella* (p. 257) is as follows:—

"Alis anterioribus atris, fascia oblique transversa, aurea vel orichalcea, post basim atram, fascia media rubra, dorsum versus paullulum attenuata, utrimque aureo-marginata (vitta externa aurea parum obliqua), linea apicis cærulescenti- vel violaceo-argentea continua, fasciam mediam versus producta; abdomine superne aureo-fusco. 5—4½."

"A remarkable new species, which I have named after my friend the indefatigable Micro-Lepidopterologist, A. Schmid, of Frankfort-on-the-Main.

"Head and thorax metallic grey, with considerable brassy lustre; the sides of the thorax especially appear to be quite brassy. Antennæ blackish, as in the allied species, with the joints becoming gradually more broadly and sharply toothed, and beneath, where they are a little paler, with a slight degree of brassy lustre. At about three-fourths of the length of the antennæ are six or seven joints of a snowy-white, then follow as many black ones, leaving again the tip of the antennæ pure white. Palpi very slender, rather shining yellowish-brown, beneath with some darker scales on the middle joint, and on the slender pointed terminal joint. Legs metallic beneath, above blackish; all the ends of the tarsi white, the hinder tibiæ with two silvery spots. The abdomen is blackish-grey, rather metallic at the edges, and the upper surface of the five penultimate segments is clothed with golden brown scales, which are more distinct and occupy a greater breadth in the female than in the male. These soon disappear in specimens which have flown, but are very distinct in bred specimens. The anal flap of the male is slightly paler. Beneath, the abdomen is dark yellowish-grey, with metallic lustre.

"The anterior wings, which appear decidedly broader than in *C. Druryella** (Zell.), are deep velvety black. For about a sixth of the entire length of the wing the base remains pure black, then follows a brassy or pale golden fascia; this is considerably

* See subsequent note, p. 648.

narrower than the black basal portion of the wing, begins on the costa with its full breadth and goes obliquely across, generally terminating just before the inner margin. It appears to be divided by the fold of the wing, without, however, really being interrupted. Then the black ground colour again reappears for a considerable breadth, till, about the beginning of the second half of the wing, we perceive the characteristic transverse blotch, with a golden fascia on each side.

"The anterior golden fascia has a scarcely perceptible oblique direction, and is distinctly margined posteriorly with black; the large, broad, medial spot is only orange-coloured in flown specimens, in fine bred specimens it is decidedly red, of a deep cinnabar colour; since the golden fascia on its posterior margin is much less obliquely placed than in the allied species, it follows that the red spot forms a quadrangle of which the costal side is somewhat longer than the dorsal side, but not strikingly so; the posterior golden fascia is obliquely placed (in many specimens scarcely deviating from the perpendicular), and is uninterrupted, internally margined with black; it generally terminates on the costa with some whitish scales. The apical portion of the wing is again deep black, with blackish-grey cilia, and bears the marking characteristic of our species. In the apex of the wing we see, as in the allied species, a white streak, but in *Schmidiella* this is immediately continued as a long, not curved, line, which terminates obliquely beyond the anal angle; it shines very brilliantly blueish, or violet-silvery, and adds not a little to the beauty of this charming insect. The posterior wings are blackish-grey, with very long cilia.

"The underside of the anterior wings is of a deep black-grey, the whitish apical streak, and the whitish commencement of the golden fascia which borders posteriorly the red spot, are alone represented.

"The larva of this species lives with us in the second half of August and throughout September, mining the leaves of *Vicia Sepium*. The mine is flat, broad, undersided, occupying the whole leaf, and the parenchyma becomes entirely devoured; hence it easily catches the eye, but it is much more difficult to perceive the larva, since it usually rests over the midrib of the leaf. Its haunts are open places in woods, or the margins of woods. Here and there it occurs very abundantly, and sometimes a single plant harbours an entire colony.

"The larva is of the size of a large *Lithocolletis* larva. It is slender, with the segments deeply raised, posteriorly pointed, and with the head small. When young it is yellowish-green, with a

dark-green dorsal vessel; the head is brown, with the sides blackish; the prothorax bears a black plate, divided by a slender line; the legs are of the colour of the body. Before it is full fed, the parts of the mouth become rather darker, the colour of the body changes to a pale orange-yellow, and on it are three purple-red longitudinal lines, which consist of separate rows of spots. The middle line begins on the second thoracic segment with some small spots, which on the following segments become gradually broader and closer, thus appearing contiguous; the lateral lines begin faintly on the first thoracic segment, and are more distinct on the second; they are in general shorter than the middle line, and the spots of which they are composed are sharper and more distinct.

"It assumes the pupa state on the ground in an elongate, loose-fitting, whitish, semi-transparent cocoon, in which the larva remains unchanged throughout the winter, turning in the spring to a slender, brownish-yellow pupa.

"The perfect insect is found in the localities inhabited by the larvæ from the middle of June to the middle of July; apparently it is not scarce, but easily overlooked.

"Hitherto only found in Switzerland, near Zürich, and at Bremgarten (Boll.)."

The note appended to the mention of *Cosmopteryx Druryella* is as follows:—

"There is no doubt that, on account of the insufficiency of the description, the name *Drurella* of Fabricius may, with equal correctness, be referred to several species; and, indeed, I believe this is what has actually happened. At all events the *C. Druryella* described by Zeller (Ent. Zeitg. 1850), of which, through the kindness of the Glogavian entomologist, I possess an original Silesian specimen, is very distinct from our species. It has the wings decidedly narrower than my *C. Schmidiella*, and the abdomen is of a unicolorous brown-grey; the head is more brilliantly metallic, and the entire base of the anterior wings for a considerable distance is purely brassy. The posterior golden fascia bordering the red medial spot is placed very obliquely, and hence the form of the medial spot is more triangular. The apical streak is continuous. According to Zeller's opinion, the larva of this *C. Druryella* must mine in the leaves of the hop.

"Unless I am much mistaken Stainton's *C. Drurella* (Ins. Brit.) is likewise specifically distinct both from Zeller's *C. Druryella* and from my *C. Schmidiella*. It comes very close to my species,

but differs in certain characters, which also appear to Mr. Stainton (as he informs me by letter) sufficient to support a specific distinction. The larva of this species also feeds on the hop. Amongst the most important differences, as far as I can judge from the study of two of Stainton's original specimens, the abdomen is not brown above. The anterior wings are as broad as in *C. Schmidiella*, and at the base quite similar to my species; the golden fascia on the posterior margin of the orange-red transverse spot is certainly less oblique than in Zeller's species, but yet decidedly more oblique than in *C. Schmidiella*. Finally, and this is probably the best distinctive character, the line in the apex of the wing is interrupted for a considerable length, so that we only see two short streaks, one in the extreme apex of the wing and one above the anal angle (as is distinctly stated by Stainton in his diagnosis). A specimen sent me by A. Schmid, which probably comes from the neighbourhood of Frankfort, is identical with this British species.

"Hence then we have three very closely allied species, of which the distribution and synonymy is not at present easy to decide. To these must be added as a more easily distinguishable fourth species, Heyden's *C. Scribaïella* (Zeller, Ent. Ztg., 1850).

"The *C. Druryella* figured by Herrich-Schäffer (tab. 121, fig. 122) is, in my opinion, Stainton's species."

The next step in the study of this genus came from Herr Hofmann of Ratisbon. Early in August, 1859, he discovered a grass-mining larva in the leaves of *Hierochloë Australis;* some of these he very kindly sent to me, and I, having mistaken them for larvæ of some species of *Elachista*, thus noticed them among the enigmas in the "Entomologist's Annual" for 1860, p. 152.

"80. An *Elachista* larva collected by Herr Hofmann at Ratisbon early in August; it mines the leaves of *Hierochloë Australis*, making straight rather-narrow mines, but eventually several side by side, so as to occupy nearly the whole width of the leaf; the mine is *perfectly clean, the excrement being excluded through a hole in the cuticle.*"

The following June, in a letter received from Dr. Ottmar Hofmann, I read to my surprise:—

"The larvæ which were sent you on the 14th August, 1859, mining in *Hierochloë Australis*, have not produced an *Elachista* as we had suspected, but *Cosmopteryx Druryella;* up to the present time we have bred nine specimens. The notice given by Herrich-Schäffer in his vol. 5, that the larva of *C. Druryella* feeds on *Vicia*

Sepium, certainly does not belong to that species, but to the *C. Schmidiella* described by Frey."

On the receipt of this letter I put a short notice in the "Entomologist's Weekly Intelligencer," June 16th, 1860 (vol. 8, p. 83) as follows:—

"*Cosmopteryx Druryella?* Last August I received from Herr Hofmann, of Ratisbon, a larva mining in the leaves of a grass, *Hierochloë Australis;* it had not the habit of an *Elachista* larva, as it ejected its excrement through a hole in the mine, but in personal appearance there was nothing striking about it. The larvæ which I received all died in the winter, but I learn from Dr. Ottmar Hofmann that from the specimens of the same larvæ, which his father had retained at Ratisbon, several specimens have appeared which closely resemble *C. Druryella*. That it cannot be our British species, to which I have now restored the Haworthian name (*Eximia*), is evident, as that has a pretty red-marbled larva which mines in hop leaves, and the *Druryella* of Herrich-Schäffer *seems* to be our insect. *Schmidiella*, which has also a red-marbled larva, mines in the leaves of *Vicia Sepium*. The *Druryella* of Zeller is a totally distinct species, of which the larva is unknown. Possibly there are several new species like *Druryella* yet to turn up."

Immediately on the appearance of this notice Mr. Thomas Brown of Cambridge forwarded to me for inspection a *Cosmopteryx*, with which I had been much struck when looking through his collection two years previously.

Mr. Brown wrote as follows:—

"The mention of *Eximia* in last week's "Intelligencer" has reminded me of an insect I took some time ago in our fen. I have been told that it is *Eximia*, and that the larva feeds on hops; but there were no hops within a mile of the open fen where I took it, and I enclose it for your inspection, and shall be glad of your opinion."

Soon after I received from Mr. Farren two specimens of a *Cosmopteryx* taken in the New Forest amongst bramble, where there were no hops near—these I found to be identical with the species taken by Mr. Brown in the Cambridgeshire fens.

In the "Intelligencer" of September 22nd, 1860, I published some "Critical Observations on some of the Species of the Genus *Cosmopteryx*," and I there showed that if we looked at the essential characters of the three known species, and arranged them in a tabular form, we left a space for a fourth species, the characters of which would be precisely those that Mr. Brown's insect possessed.

Thus if we construct the following table—

	Extreme base black.	Entire base brassy.
Apical streak uninterrupted ..	*Schmidiella.*	*Druryella*, Z.
Apical streak interrupted, forming two spots.. ..	*Eximia.*	

we find that Mr. Brown's new species exactly fits into the vacant square.

At that time I did not propose a name for the insect, for not having seen the species which had been bred from the *Hierochlœ*, I could not say whether they were identical; I was, indeed, rather suspicious that they might be, for on the 31st August, 1860, having received a further supply of the Ratisbon larvæ from Herr Hofmann, which fed well whilst in my possession, but had soon devoured the limited supply of grass sent with them, I had tried them with *Arundo Phragmites*, and found that the larvæ soon entered the leaves of that plant. However, it did not ultimately suit them, and the larvæ I had all died.

In the autumn of 1860, I received from Herr Hofmann some specimens of his insect bred from the *Hierochlœ*, and found that they had the entire base of the wing brassy, and the apical streak uninterrupted; therefore they agree with the characters of Zeller's *Druryella*, and unless some distinctive character can be detected it must bear the name *Druryella*.

In the "Entomologist's Annual" for 1861, p. 90, I proposed the name *Orichalcea* for Mr. Brown's new species, taken also by Mr. Farren in the New Forest, and of which I had found three specimens in the British Collection of the British Museum. I did not then describe the insect, but repeated the tabulation of the four species already given in the "Entomologist's Weekly Intelligencer," vol. 8, p. 198, giving simply the distinctive characters, thus:—

"*Orichalcea*, n. sp. Entire base brassy, apical streak interrupted, forming two spots."

The next step in the study of the genus was the publication in the 6th volume of the "Annales de la Société Entomologique Belge" of a notice by Fologne on the habits and transformations of the hop-feeding species, under the name of *Cosmopteryx*

Drurella, F., *Eximia*, Haw. Monsieur Fologne had shown me in 1861 his drawings of the larva and mine, and had inquired whether the transformations of this species had been already published. I assured him that this had not yet been done, and advised him strongly to publish his notes and drawings. Every entomologist acquainted with the larva, mine, or perfect insect, will immediately recognize the accurate fidelity of the representations given on Plate II. of this volume—a plate at which it is impossible to look without a sensation of pleasure.

Fologne writes as follows (pp. 162, 163):—

"This beautiful species is very common in the larva state in the neighbourhood of Brussels. I have observed it at Boitsfort, at Woluwe-Saint-Pierre, Etterbeek, Ixelles, &c.

"The mines excavated by the larva in the leaves of the wild hop (*Humulus Lupulus*) are very apparent; generally each leaf contains several of them.

"The egg is always laid near one of the principal ribs of the leaf; as soon as the larva is hatched it enters this rib, in which it mines for some time; it afterwards deviates from it to the right or to the left, forming rather broad galleries, which it successively abandons to return to the rib. When it is nearly full fed it forms large irregular blotches, leaving only the two cuticles of the leaf, so that the mine is then equally evident from the upper or under sides of the leaf. The colour of the blotches when newly made is ochreous, but they become whitish with age.

"The interior of the rib, which forms the centre of a mine, is carpeted with white silk, which prevents it from being transparent.

"The larva generally keeps itself concealed in this rib, only quitting it for the purpose of feeding. Directly it is alarmed by one's touching the leaf, it returns to its shelter, walking backwards.

"Till nearly full fed, it is almost unicolorous whitish, excepting the head and second segment; but when it quits the leaf, it is adorned with dorsal and subdorsal lines of a carmine tint. The posterior part of the head is brown, and is seen through the transparent second segment, which bears a brown corneous plate of an oval form, divided by a pale central line. These larvæ have six anterior legs, eight ventral prolegs, and two anal prolegs.

"They are full fed at the beginning of the month of September, when they quit the leaf and descend to the ground, where they enclose themselves in a tube of white silk, in which they pass the winter unchanged, not assuming the pupa state till the spring.

"The perfect insect makes its appearance in July, and may then be found running and glistening in the sun on the leaves of the hop. It flies but little and slowly from one leaf to another.

"I abstain from giving a description of the imago, and refer to figure 1, on Plate II."

This figure shows very distinctly the black base of the anterior wings, and the apical streak divided into two separate spots.

In the year 1862 I had the pleasure of pointing out mines of this species at Aix-la-Chapelle to Herr Kaltenbach.

In 1863, on the occasion of the Meeting of German Naturalists at Stettin, the Micro-Lepidopterists collected there saw with delight in the collection of Dr. Schleich of Stettin, two magnificent specimens of *Cosmopteryx Lienigiella*, which that successful investigator of *Lepidoptera* had obtained in a moist meadow to the east of the town; both had been taken about 7 P.M. whilst flying slowly and steadily (not with the sharp jerking motion of the black species); one was taken on the 16th of June, the other equally fresh on the 23rd of July.

I trust the day is not distant when Dr. Schleich will discover the larva of this little gem, and enrich our collections with bred specimens of *Lienigiella*.

Amongst Dr. Schleich's other interesting captures were specimens of our Cambridge fen * insect *Cosmopteryx Orichalcea;* of this insect Dr. Schleich had made the following manuscript note :—

"We took the imago rather plentifully in the summer of 1862—this year, however, more sparingly—in a moist meadow between Grabow and Bredow. It flies at the end of May, throughout June, and in July, often swarming at evening in the sunshine. Seeking in August industriously for the larva of this species, I found, on the 9th of that month, in the broad leaves of a species of grass, which Herr Apotheker Marquardt has been so good as to name for me *Festuca Arundinacea*, a number of mining larvæ, some of them already full-grown, which, on account of their great liveliness and their peculiar way of mining, I perceived at once could not belong to any *Elachista*. The long mine itself has naturally considerable resemblance to that made by an *Elachista* larva, but is entirely free from excrement, which is always ejected

* I should remark that Dr. Schleich's hunting-ground seems to produce most of our peculiar fen insects. He had also found there *Gelechia inornatella* and *Palustrella*, which had not been previously detected on the Continent.

by the larvæ through openings made in the mine at irregular distances from one another. Hence the mine appears quite white, and the larva moves in it with considerable liveliness. When young the larva is almost transparent, and only betrays its position in the mine by its shining black head and black plate, divided by a very slender central line, on the second segment, and by the dark anal plate; these characters also remain with the adult larva, but with increasing age the body assumes a distinct sulphur-colour. The segments are rather deeply incised, the dorsal vessel is dark green, the anterior legs are of the colour of the body, but with the tips darker. The larva seems to quit its abode very readily, and easily forms a new one. When full grown it spins a loose, whitish, elongate cocoon amongst the dead stems and leaves of grass."

Now we have no evidence yet of the fact that this larva is really that of *Cosmopteryx Orichalcea;* but we need have no hesitation, from the similarity of its habits to those of the larva found by Herr Hofmann in the leaves of the *Hierochloë Australis* at Ratisbon, in pronouncing it a *Cosmopteryx;* and the probability seems very considerable of its being the larva of that species of *Cosmopteryx* which had been found in that precise locality, namely, *C. Orichalcea.*

The two specimens of *C. Lienigiella* which Dr. Schleich met with were in a different locality.

I will now glance at the sum total of our present knowledge of the European species of the genus *Cosmopteryx.*

We have six species, viz.:—

One with ochreous anterior wings (*Lienigiella*), of which the larva is unknown and unsuspected:

One with brown anterior wings (*Scribaïella*), of which the larva is unknown and unsuspected: both these species have slender, longitudinal, silvery streaks in the basal portion of the wing; in *Lienigiella* the margins of the central fascia, which is little yellower than the ochreous ground colour, are silvery; in *Scribaïella*—which has the central fascia dark yellow, inclining to orange, not the rich reddish-orange colour we see in the black species—the margins are pale golden, but the exterior margin is ruptured a little above the middle of the wing, and the orange-yellow colour protrudes through it: and we have

Four species with black anterior wings, namely—*Eximia*, with the base of the wing black, and the apical streak interrupted, of which the pretty red marbled larva mines the leaves of the hop; *Schmidiella*, with the base of the wing black, and the apical streak uninterrupted, of which the pretty red marbled

larva mines the leaves of *Vicia Sepium; Orichalcea*, with the base of the wing brassy, and the apical streak interrupted, of which the larva is *suspected* to mine in the leaves of *Festuca Arundinacea;* and *Druryella*, with the base of the wing brassy, and the apical streak entire, of which the larva mines the leaves of *Hierochloë Australis*.* In all these species the margins of the central fascia, which are golden in the male, have a rosy or violet tinge in the female; and though all have the tips of the antennæ white, there is this difference, that *Druryella* and *Orichalcea* have two white rings before the white tips; and in *Schmidiella* and *Eximia* there is only one white ring.

The synonymy of the species will be as follows:—

1. *Lienigiella*, Zeller, Isis, 1846, p. 298.—Stainton, Zoologist, 1850, p. 2753.—Id. Ins. Brit. Lep. Tin. p. 229.—Herrich-Schäffer, Schmett. v. Europa, v. p. 284.
2. *Scribaïella* (Heyden), Zeller, Ent. Zeit. 1850, p. 197.—Herrich-Schäffer, Schmett. v. Europa, v. p. 284, fig. 998.
3. *Eximia*, Haworth, Lep. Brit. p. 532.—Stephens, Illustr. Haust. iv. p. 273.—Stainton, Manual, ii. p. 395.—*Drurella*, Stainton, Ins. Brit. Lep. Tin. p. 229.—Frey, Tin. u. Pteroph. der Schweiz, p. 259, Anm.—Fologne, Ann. de la Soc. Entom. Belge, vi. p. 162, pl. ii. fig. 1.—*Druryella*, Herrich-Schäffer, Schmett. v. Europa, v. p. 284, fig. 999.
4. *Schmidiella*, Frey, Tineen u. Pteroph. der Schweiz, p. 257. (Alluded to also by Herrich-Schäffer under *Druryella*.)
5. *Orichalcea*, Stainton, Ent. Annual, 1861, p. 90.
6. *Druryella*, Zeller, Ent. Zeit. 1858, p. 196.—Frey, Tineen u. Pteroph. der Schweiz, p. 258, Anm. (Alluded to also by Herrich-Schäffer under *Scribaïella*.)†

* I believe that Professor Frey entertains an idea that the insect bred from the *Hierochloë* is distinct from the *Druryella* of Zeller; but at present I am not aware of any differences, and the description seems to suit exactly.

† Tengström has a *Druryella* in his "Anmärkn. och Tillagg till Finlands Småfjäril-Fauna," p. 191, but I cannot now say whether the specimen which I then determined for him as *Druryella* was not *Orichalcea*.

LI. *On the Types of* Phryganidæ *described by Fabricius from the Banksian Collection.* By R. M'Lachlan, Esq., F.L.S.

[Read 7th December, 1863.]

In the present paper I purpose making a few remarks on the species of *Phryganidæ* described by Fabricius as contained in the collection of Sir Joseph Banks, and of which the types still exist.

This collection has been lately presented to the British Museum by its former possessors, the Linnean Society, and all who take an interest in the preservation of typical specimens will rejoice greatly that those contained in this collection have been saved from the ruin that awaited them, had they remained much longer in the unsuitable quarters in which the Banksian Cabinets were unavoidably placed at Burlington House.

I have lately examined the few Trichopterous types, only three in number. These are in very bad condition, but by dint of cleaning off the fungoid matter that enveloped them, I have been able to satisfy myself perfectly as to the modern genera in which these insects should be placed, and that two (and probably all three) have received new specific names. This is another example of the necessity that exists for examining typical collections, whenever that may be possible, before venturing to propose new names. It is, no doubt, true, that a vast number of the Fabrician descriptions, and many also of the Linnæan, are quite enigmatical when no types exist; the same remark applies to the descriptions of most of the old authors, and would be true of many of the modern ones also, were not the types of these latter, in most cases, represented in some of the large public or private collections; and for this reason, we are told, that no name should stand unless the species be perfectly recognizable from the description. But who is to be the judge in this matter? A. may say that B.'s descriptions are quite unintelligible to him, and B. will retort that he can make nothing of those of A., whereas C. may be able to correctly apply those of both. It seems to me possible, that our inability to correctly understand the styles of different writers is often the reason why a description is set down as worthless, when, at the same time, it may be quite correct. I have seen it remarked, that it would be a good thing if all the descriptive works on natural

history, published before a certain date, should be burned. No doubt this would save an immense amount of what, to most of us, is uncongenial labour; but while it would be unjust to those naturalists whose writings are the foundation of all our knowledge, is it not also probable that some naturalist of the next century may include, in a similar wish, those modern works that we are wont to consider as masterpieces of research? My own view is, that one law, and one only, can exist as regards nomenclature in natural science—that of priority, and that it is the duty of all describers of new species to hold this law sacred.

The foregoing remarks may be considered digressive, but as the subject-matter of these notes is intimately connected with the question of nomenclature, I thought it a fitting opportunity for stating my opinion on a question that has been lately so prominently before this Society.

The descriptions of the three typical species of *Phryganidæ* in the Banksian collection were first published in 1781 in the "Species Insectorum," and were re-produced in the later works of Fabricius, viz., the "Mantissa Insectorum" and "Entomologia Systematica." The insects were called *Phryganea irrorata*, *P. signata* and *P. notata*, on each of which I will make a few remarks:—

Phryganea irrorata, Fabr. Spec. Insect. i. p. 389, 9; Mantiss. Insect. i. p. 245, 10; Ent. Syst. ii. p. 77, 11.

"P. alis fusco griseis: maculis atomisque niveis numerosis.

"Habitat in America meridionali Mus. Dom. Banks.

"Magnitudo *P. rhombicæ*. Caput nigrum antennis testaceis. Thorax niger macula dorsali testacea. Alæ anticæ apice subascendentes, cinereo fuscæ maculis plurimis rhomboidalibus atomisque niveis. Pedes testacei."

The type of this species has lost the intermediate legs and the abdomen, but otherwise is in tolerable condition. It is the same as *Limnephilus intercisus*, Walker, Brit. Mus. Cat. Neurop. pt. 1, p. 30, 41. The spurs of this insect are arranged 1, 2, 2, and from this cause it has been placed in a sub-genus (without name) of *Enoicyla*, Rambur, by Dr. Hagen in the "Neuroptera of North America," p. 268, 2. The description of Fabricius applies very well, and the words "alæ anticæ subascendentes" give a good idea of the shape of the anterior wings, which have much the same form as in that sub-genus of *Limnephilus* to which the names of *Glyphotælius* and *Glyphidotaulius* have been given.

Dr. Hagen, in the work before mentioned, erroneously gives

Fabricius's name *irrorata* to *Neuronia concatenata* of Walker, with the remark that the type requires to be examined again.

Phryganea signata, Fabr. Spec. Insect. i. p. 389, 7; Mantiss. Insect. i. p. 245, 8; Ent. Syst. ii. p. 76, 8.

"P. alis griseo fuscis: margine postico flavo striato.

"Habitat in America septentrionali Mus. Dom. Banks.

"Parva. Caput fuscum. Alæ griseo fuscæ, nitidæ, flavo maculatæ et margine postico flavo striato."

The type of this species is in very bad condition, without head, abdomen and legs, and the wings are inextricably matted together, so that the neuration of the anterior wings is almost our only guide towards determining the genus. From the peculiar form of the discoidal cell, the deep indentation formed by the sub-costal nervure shortly before the apex, and the arrangement of the apical veins, I have no doubt that the insect is a male of the genus *Brachycentrus*, Curtis; a conclusion favoured also by the general form of the creature so far as this can be made out.

The two described species of this genus from North America are *B. fuliginosus*, Walker, Brit. Mus. Cat. pt. i. p. 88, 7, and *B. incanus*, Hagen, Neurop. North Amer. p. 272, 2. It is impossible to say if the species of Fabricius be the same as either of these, but the description is rather in favour of *B. incanus*, an insect I have never seen.*

Dr. Hagen places *P. signata*, Fab., in *Neuronia* in his work (p. 250, 4), with the query—"Does it belong to this genus?"

Phryganea notata, Fabr. Spec. Insect. i. p. 390, 12; Mantiss. Insect. i. p. 246, 15; Ent. Syst. ii. p. 78, 18.

"P. alis anticis cinereo flavescentibus: macula marginali fusca.

"Habitat in America boreali Mus. Dom. Banks.

"Corpus fuscum antennis pedibusque testaceis. Alæ anticæ cinereo flavescentes, unicolores macula marginali fusca, posticæ albæ, hyalinæ, nitidæ."

When examining the type of this insect, the first thing that struck me as singular was the peculiarly developed and deeply divided prothorax indicative of the genus *Dipseudopsis*, Walker; and, on carefully comparing it with the type of Mr. Walker's *D. Capensis*, I could not detect the slightest difference, and believe

* Dr. Hagen now informs me that he thinks *B. incanus* (of which he possesses only one immature example) to be identical with *B. fuliginosus*.—R. M'L., March, 1864.

them to be identical. But then there is the difficulty as to the widely distant localities given as the habitat by the two authors. As far as I can learn, there is no doubt that the type of Mr. Walker's species was in a collection of insects sent from Natal by Mr. Gueinzius, so the mistake must rest with Fabricius; and I may mention, that the only two species of *Dipseudopsis* at present described are from the Old World, viz., *D. Capensis*, Walker, from South Africa, and *D. collaris*, M'Lachlan, from China.

The type specimen of *P. notata* does not agree with the above description so far as the words "macula marginali fusca" are concerned. One would imagine that Fabricius had before him some species possessing a marked pterostigma, of which there is certainly no sign either in his type or in that of Mr. Walker. But as there is no evidence that the labels have been misplaced, and no other insect in the Collection that we can reasonably suppose to have a better right to the name, I think the specimen now bearing that label must be considered as the type.

In Dr. Hagen's work, *P. notata* is likewise placed in the genus *Neuronia* (p. 252, 8), with the remark, "Is this *N. semifasciata*, Say?" My notes sufficiently answer this question.

PROCEEDINGS

OF THE

ENTOMOLOGICAL SOCIETY OF LONDON.

1861.

February 4, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors :—'Mémoires de la Société de Physique et d'Histoire Naturelle de Genève,' Tome xv., Deuxième Partie ; presented by the Society. 'Proceedings of the Royal Society,' Vol. xi. No. 42 ; by the Society. 'Journal of the Proceedings of the Linnean Society,' Supplement to Vol. v., Botany ; by the Society. 'Annales de la Société Entomologique Belge,' Tome iv. ; by the Society. 'Sulla Monografia del Bombice del Gelso del Dottor Emilio Cornalia, Relazione di Antonio Villa ;' 'Osservazioni Zoologiche eseguite durante l'ecclisse parziale di sole del 18 Juglio, 1860, communicate dal Socio Antonio Villa ;' 'Straordinaria apparizione di insetti carnivori, di Antonio Villa ;' 'Sui Curculioniti dell'agro Pavese enumerati dal Dottor Prada, Relazione letta nella seduta 18 Decembre, 1859, della Societá Geologica in Milano dal socio fondatore Antonio Villa, Vice-Presidente della Societá Stessa ;' by the Author. 'The Journal of the Society of Arts' for January ; by the Society. 'The Farm and Garden,' Nos. 23 and 24 ; by C. A. Wilson. 'The Zoologist' for February ; by the Editor. 'The Athenæum' for January ; by the Editor. 'The Entomologist's Weekly Intelligencer,' Nos. 223 to 226 inclusive ; by H. T. Stainton, Esq.

Election of a Subscriber.

Joseph Holdsworth, Esq., of 54, Lombard Street, London, was balloted for and elected a Subscriber to the Society.

Exhibitions.

Mr. Janson exhibited a specimen of Philonthus punctiventris, *Kraatz* ('Naturgischichte der Insecten Deutschlands,' ii. 578, 10 ; 1857), and made the following observations respecting the species :—

"Nearly allied to P. carbonarius, *Gyll.*, from which it is readily distinguished by its slender antennæ, of which the penultimate articulations are but slightly transverse ;

by the deep and close punctuation of the region of the head behind the eyes, and by the green tint of the elytra. These characters, and the simple anterior tarsi in both sexes, will also serve at once to distinguish it from P. æneus, *Rossi*.

"This species has not hitherto been recorded as British. The specimen now exhibited, the only one which I have seen, was taken, in the autumn of last year, near London, by my friend Mr. Edwin Shepherd."

Mr. Walker exhibited, on the part of Mr. F. Smith, some very small white pupa-cases that were found attached to wasps' nests. These pupæ are very finely striated, and their size is so very minute that they might have been mistaken for eggs if Mr. Smith had not discovered the skin of the larva inside.

Mr. Walker also exhibited, from Mr. Smith, some larvæ taken feeding on the refuse of hornets' nests.

Mr. Westwood considered them to be the larvæ of an Anthomyia, and probably of A. canicularis.

Mr. Stevens exhibited some beautiful Saturniæ and other Lepidoptera, sent from Port Natal by M. Gueinzius; and some extraordinary Tineina from Bootan.

Mr. Bond exhibited a specimen of Cidaria reticularia, *W. V.*, one of three examples taken in the Lake District, in 1856, by Mr. T. H. Allis. The species had not previously been recorded as an inhabitant of Britain.

The Secretary read a paper by T. V. Wollaston, Esq., intituled "On the Atlantic Cossonides."

March 4, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'On some Oceanic Entomostraca collected by Captain Toynbee,' by John Lubbock, Esq., F.R.S., F.L.S.; presented by the Author. 'The Journal of the Royal Agricultural Society of England,' Vol. xxi. Part 2; by the Society. 'The Journal of the Society of Arts' for February; by the Society. 'The Athenæum' for February; by the Editor. The 'Zoologist' for March; by the Editor. 'The Entomologist's Weekly Intelligencer,' Nos. 227 to 230 inclusive; by H. T. Stainton, Esq. 'Stettiner Entomologische Zeitung,' Vol. xxii. Nos. 1—3; by the Entomological Society of Stettin.

Elections.

George Sharp Saunders, Esq., of Hill Field, Reigate, was elected a Member of the Society; and Alfred Haward, Esq., of Gloucester Road, Croydon, was elected a Subscriber to the Society.

Exhibitions.

Mr. Stainton exhibited two beautiful specimens of Xylina conformis, taken near Cardiff, on ivy-blossoms, in October, 1859. The species had not hitherto been captured in Britain.

Dr. Wallace exhibited fine dark varieties of Hemerophila abruptaria, taken near London; and a Lasiocampa bred from the larva found in the Isle of Wight, which he

considered closely resembled the species or variety from the North of England, named Callunæ by Dr. Palmer.

Mr. Mitford exhibited a beautiful brown variety of Biston prodromarius, and a hybrid produced from Phigalia pilosaria and Nyssia hispidaria, respecting which he furnished the following notes:—

"On the 5th of March, 1859, I enclosed a female of Nyssia hispidaria, which had recently emerged from the pupa, in a gauze-covered chip-box, and also introduced a male of Phigalia pilosaria. They copulated, and on the 7th of that month the female deposited her eggs, which hatched the first week in April, and the larvæ assumed the pupa state about a month afterwards. The following March three perfect and three crippled males, and one female made their appearance. In size the males resemble N. hispidaria, but in colour have the lighter and greener tint and transparency of wing of P. pilosaria; the legs and antennæ of the female also are annulated as in the females of the latter species. I should add that but for an accident, which destroyed the greater part of my pupæ, I should probably have bred forty or fifty more."

Mr. Mitford also exhibited the following species of Psyche, with notes on their economy:—

"*P. fusca.* Larva of this species abundant in the neighbourhood of Hampstead; it feeds early and late in the season, chiefly on bramble; in the summer months, on various trees and plants, more particularly buckthorn, oak and mountain ash. The larvæ are hatched in August, and the moths appear the following June twelvemonths; thus they are two years in arriving at the perfect state. The female pupa-cases are found spun up on leaves in an upright position; that of the male is generally pendant from branches or main stems.

"*P. radiella.* The perfect insect frequents moist places on Hampstead Heath, in June. I have never found the larva-cases.

"*P. salicolella.* The larva-cases of this species were discovered by Mr. Tompkins on buckthorn, and afterwards by myself on birch, at Hampstead: they are a *fac-simile* of a small P. fusca case.

"The females of these three species remain within the larva-case.

"*P. intermediella.* Found on stems of fir-trees at Black Park, in abundance, in June.

"*P. roboricolella.* The larva-cases are found on various trees at Hampstead.

"*P.* ——? Apparently a very distinct species, allied to P. roboricolella, but the wings much more rounded, as in P. radiella."

Mr. Mitford likewise exhibited a fine specimen of Acrolepia marcidella, taken in his garden at Hampstead.

Mr. Bond observed that the two or three examples of this species hitherto taken in this country were much wasted.

Dr. Knaggs announced that the Noctua exhibited and described by him at the Meeting of the Society on the 1st of October last as Nonagria? Bondii, had been pronounced by M. Guenée to be a species unknown to him.

Mr. Waterhouse exhibited three species of Scymnus, *viz.*, S. discoideus, and two others which he thought might probably be included by authors among the varieties of that species, but which have different habits and present distinguishing peculiarities. With regard to S. discoideus, he observed that all, or almost all, authors stated that the insect was found on, or in the immediate neighbourhood of, fir trees:

he had examined a large number of specimens having this habitat, but he did not find that amount of variation in colour which had been attributed to the species; on the contrary, a large number of specimens collected by himself and Dr. Power, from fir trees, presented no marked varieties: they could all be comprised in the following description:—

Oval (slightly oblong), black; elytra thickly and rather finely punctured, the punctures of unequal size; fulvous-red, with the suture narrowly edged with dusky, and sometimes likewise the base of the elytra, as well as the outer margin on the basal half; antennæ, palpi and legs more or less dusky (never entirely pale); thorax with the sides very generally rufescent, especially towards and at the anterior angles. Body beneath rather strongly but by no means thickly punctured; the chest with a distinct longitudinal grove.

The dark edging to the suture and other parts of the elytra is very commonly ill-defined, and by no means distinct. S. atriceps of Stephens is founded upon an immature specimen of this species. The other two insects were found in marshy situations in localities far remote from fir trees. The first of these Mr. Waterhouse distinguished from S. discoideus by its somewhat smaller size; less ample, and posteriorly somewhat acuminated elytra; the more dense and fine puncturing of the under parts; the constantly uniform testaceous colour of the legs, the shorter and more inflated form of the femora; the excessively indistinct or obsolete pectoral grove; and, lastly, by the colouring. Here the black on the elytra usually covers as much surface as the red; in most instances it completely margins each elytron, is broad at the base of the elytra, and on the suture it forms a band which is very broad anteriorly, and gradually contracted in width towards the apex of the elytra, but very commonly it is more or less expanded for a short distance near the middle of the suture. To this insect Mr. Waterhouse applied the name S. Mulsanti: it is the S. limbatus of Stephens's collection, but not of his description. Mr. Waterhouse stated that he had examined upwards of thirty specimens found at Southend, Deal, Holmbush, &c.

The third species is considerably smaller than S. discoideus, is black, with deep red elytra, and these are narrowly margined externally, and rather broadly margined at the apex, with black; along the suture is a broad (at times very broad) black band, which is pretty nearly of uniform width: it is, however, more particularly distinguished by its short convex form (the elytra being very obtusely rounded behind), and the punctuation of the elytra being stronger and more distinct, the punctures not varying in size, being less dense, and the interstices being even, not rugulose. Eleven specimens (mostly from the Hammersmith Marshes and Hornsey Fen) furnish the above characters: in all, the legs are black, and the antennæ and palpi dusky. This is the Scymnus limbatus of Kirby's MSS. and collection, and of Stephens's 'Illustrations.'

Mr. Waterhouse communicated detailed descriptions of these three species to the Meeting.

Mr. Waterhouse also exhibited three species of Bryaxis; two at least were hitherto unrecorded as British; one of the three is probably the B. assimilis of Curtis.

Bryaxis Helferi, Schmidt, &c., Pselaph. Faun. Pragen, p. 33.

——— ———, Aubé, Révision de la Famille des Psélaphiens, in the Annales de la Soc. Ent. de France, 2me sér. ii. p. 109.

——— *pulchella*, Schaum, in Germar's Zeitschrift für die Entomologie, iv. 192.

In size and colouring this species nearly resembles Bryaxis impressa of Denny,

Erichs., Aubé, &c., but is readily distinguished by the comparatively large size of the central fovea on the back of the thorax, this being nearly as large as the lateral foveæ, whilst in B. impressa it is very small, as in B. Juncorum; moreover, the male sex of the present insect has the anterior trochanters armed with a spine, and the first abdominal segment has a small curved groove at the apex, enclosing a small, slightly raised area. The middle tibia has a distinct spine at the apex in the same sex. Usually the red of the elytra is darker than in B. impressa.

On the Continent this species is said to be found in the neighbourhood of salt or brackish water, and such was the case with most of his specimens, these being taken at Sheppey, Southend and Gravesend, but it does not confine itself to such situations, since Mr. W. found a specimen at Hawkhurst, in Kent, and a second in the Crystal Palace.

B. Lefebvrii, Aubé, Monogr. p. 28, pl. 83, f. 1 ? Révision, &c., p. 108 ?

Mr. Waterhouse has in his British collection a female Bryaxis which in size and colouring greatly resembles B. Helferi, but which is certainly distinct. He has no note of its locality. When compared with B. Helferi it differs in having the abdomen more finely and less thickly punctured, and hence this part is more glossy, and the two striolæ at the base of the first segment are much more widely separated:* the insect is furthermore narrower, and has the humeral angles of the elytra more prominent. He has in his possession a male insect, from Paris, named B. Lefebvrii, which agrees most closely with the present insect in the points just noticed, and it agrees with the characters laid down for B. Lefebvrii (including the small size of the spur to the middle tibiæ), but here he finds a small spur to the anterior tibiæ, and he could see no spur to the hind tibiæ: in the descriptions the spur is said to exist on the middle and posterior tibiæ.

The third species belongs to the same section as B. fossulata, having the abdomen simple in both sexes; the anterior coxæ unarmed in the male, which sex is only distinguished by a small spine at the apex of the intermediate tibiæ; the three foveæ on the thorax nearly equal. In size it is equal to B. sanguinea, and its antennæ are as long as in the female of that insect, and hence longer than in B. fossulata: its colour is rufo-piceous; the elytra red, with the margins dusky; the legs fusco-testaceous. This species being apparently undescribed, the name Bryaxis simplex was proposed for it. A detailed description was communicated to the Meeting.

Lastly, Mr. Waterhouse called attention to a fine species of Anobium which had just been found by Mr. Turner in the neighbourhood of London: this would most probably prove to be the A. denticolle of Panzer; but the only specimens Mr. W. had had an opportunity of examining were two in Mr. Stephens's collection, one in very bad condition. Mr. Turner's insect differed from these in being very much larger, and apparently rather broader, being very nearly as large as A. tessellatum; its scutellum was apparently broader, and of a truly quadrate form.

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* In these insects usually may be seen three transverse depressions at the base of the abdomen, close to the edge of the elytra, and the central depression is bounded by two nearly longitudinal but slightly diverging striæ; in the male of B. Helferi the space between the striæ is very nearly equal to one-third of the width of the convex part of the abdomen; in the female it is less, since it scarcely exceeds one-fifth; whilst in the female insect which Mr. W. supposes to be that of B. Lefebvrii, the space between the striæ is decidedly more than one-third of the width of the abdomen, not including the subreflected lateral margin.

Mr. Waterhouse also read the following:—

Note on the British Species of Clambus.

"The species of Clambus described in the second volume of Stephens's 'Illustrations' are:—

"1. *Clambus Armadillus*. The description appears to me to belong to Agathidium minutum of Sturm (= Clambus minutus, *Fairm. et Lab.* = C. Armadillus, *Redt.*), but C. Armadillus of Stephens's collection is identical with C. Armadillo of Fairm., and it is from this latter insect I have no doubt that the figure in the 'Illustrations' is taken.

"2. *Clambus coccinelloides* (Kirby MSS.) is represented in Stephens's collection by a specimen of Chætarthria seminulum. 'I possess a single example of this insect, which was kindly given me by the Rev. W. Kirby' (see Steph. Illustr. ii. p. 184).

"3. *C. Enshamensis*, Steph. Illustr. and Collection. This is identified (and, as it appears to me, correctly) with Scaphidium dubium of Marsham (Ent. Brit. p. 234) by Mr. Wollaston: it is the Calyptomerus dubius of Wollaston's 'Catalogue of the Coleopterous Insects of Madeira,' C. Enshamensis of Jacquelin Duval's 'Genera des Coléoptères d'Europe,' and Comazus Enshamensis of Fairm. et Laboulb. Notwithstanding that there are certain discrepancies, when the characters laid down by Redtenbacher for his genus Calyptomerus are compared with those which are displayed by Clambus Enshamensis of Stephens, it has been supposed that they were really taken from the same insect. We are informed, however, in the Berlin Ent. Zeit. 1857, p. 174, that Calyptomerus alpestris of Redt. (the only known species of the genus) is a much larger insect than Clambus Enshamensis; and in Dr. Schaum's 'Catalogue,' 1859, p. 37, we find the two genera given as distinct, Fairmaire's genus Comazus being used for our British insect.

"In the fifth volume of the 'Illustrations' Stephens adds two other species of Clambus to our list, *viz.*:—

"*C. nigriclavis*, Rudd, MSS. (represented by a single specimen in the collection), which is the C. minutus, *Sturm.*, *Fairm.*, *&c.* = C. Armadillus, *Redt.*

"*C. nitidus*. I find no specimen bearing this name in the collection, and from the extremely brief description I am unable clearly to identify the species.

"Lastly, Stephens describes two species of the present genus amongst the species of Agathidum, *viz.*, A. minutum = A. minutum, *Sturm.*; and A. nanum = Clambus Armadillus, *Fairmaire*, *&c.*

"Of the genus Clambus, as now restricted, I have met with three species pretty plentifully in the vicinity of London: I have seen no other British species. They are:—

"1. *Clambus minutus* (Agathidium minutum), Sturm. This is the largest of our species, and is readily distinguished by an almost total absence of pubescence on the upper parts; hence it appears much more glossy; its colour is pitchy black: the thorax is margined with rufo-testaceous, narrowly before and behind, but considerably extended on the sides: the elytra very commonly have a bright rufous spot on the disk. The legs and antennæ are pale testaceous.

"2. *C. Armadillus*, DeGeer, Fairm. et Lab. Black; clothed (not very densely) with longish pale hairs; sides of the thorax very narrowly and indistinctly edged with testaceous; body beneath entirely black; antennæ and legs more or less dusky; the tarsi pale.

"3. *C. pubescens*, Redtenbacher. This is the smallest of the three species: it is distinguished by the upper parts being densely clothed with pale ashy pubescence (hence the insect has a somewhat dull appearance); the colour is black, but the apex of the elytra and the abdomen are more or less pitchy; the pale colour on the sides of the thorax is more extended than in the preceding species, and the legs are entirely of a very pale testaceous colour; the antennæ are also pale, with the exception of the club, which is somewhat tinted with brown.

"The form of the head likewise differs in these insects; and with regard to the last-mentioned species, I would call attention to the larger size of the eye, when compared with the preceding: here it occupies nearly the whole of the lateral lobe of the head, which is marked off by the antennal notch."

The following papers were read:—

"On the Geographical Distribution of the Family Zygænides," by Mr. W. F. Kirby.

"A Monograph of Pronophila, a Genus of the Diurnal Lepidoptera," by Mr. W. C. Hewitson.

"Descriptions of new Species of Aculeate Hymenoptera collected at Panama by R. W. Stretch, Esq.; with a List of the described Species, and the various Localities where they have previously occurred," by Mr. Frederick Smith.

Part 8 of the current volume of the 'Transactions,' recently published, was on the table.

April 1, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors: — 'Smithsonian Contributions to Knowledge,' Vol. xi.; 'Instructions in reference to collecting Nests and Eggs of North-American Birds;' 'Catalogue of the described Lepidoptera of North America,' prepared for the Smithsonian Institution by John G. Morris; presented by the Smithsonian Institution. 'New Genera and Species of North-American Tipulidæ with short Palpi, with an Attempt at a new Classification of the Tribe,' by Baron R. von Osten-Sacken;' by the Author. 'Journal of the Proceedings of the Linnean Society,' Vol. v. No. 19; by the Society. Leydig's 'Natural History of the Daphnidæ—Reviewed by J. Lubbock, Esq.'; by the Author. 'On Sphærularia in Bombi,' by John Lubbock, F.R.S., F.L.S., F.G.S.; by the Author. 'Exotic Butterflies,' Part 38; by W. W. Saunders, Esq. 'The Zoologist' for April; by the Editor. 'The Journal of the Society of Arts' for March by the Society. 'The Entomologist's Weekly Intelligencer,' Nos. 231 to 233; by H. T. Stainton, Esq.

Election of a Subscriber.

Aaron Solomons, Esq., of 16, Pownall Road, Dalston, was elected a Subscriber to the Society.

Exhibitions.

Mr. F. Smith exhibited a number of Myrmedonia funesta and other Coleoptera, found in a nest of Formica fuliginosa at Erith.

Mr. Fereday exhibited some specimens of Nausibius dentatus, *Marsham*, bred from the fruit of Dimocarpus Litchi received from China.

Dr. Knaggs exhibited a small mutilated larva, apparently lepidopterous, respecting which he communicated the following :—

" A medical friend was called to see a child, ten years of age, who was suffering from vomiting of blood and passage of blood by stool. On examination of the pharynx he observed that blood was trickling from the posterior nostrils ; during the examination the child expressed an inclination to sneeze, upon which a white pocket handkerchief was applied, in order to see if any blood was thereby ejected ; there was, however, nothing but mucus and the small larva produced, which was alive at the time, but had since been crushed by accident."

Dr. Knaggs observed that instances of insects being ejected from the nostrils by sneezing had been previously recorded in the 'Proceedings' of the Society. The injured larva he now exhibited was probably that of Endrosis fenestrella, a very common species everywhere in houses ; and he considered it not impossible that it was on the handkerchief before the sneezing took place.

Mr. M'Lachlan exhibited specimens of a trichopterous insect new to Britain, the Goniotaulius concentricus, *Kolenati*, not Phryganea concentrica, *Zett.* ; Stenophylax vibex, *Brauer*, not of Curtis. Of this species about a dozen specimens were taken in 1860, near Ranworth, by Mr. Winter ; it is a common species on the Continent, and variable, the typical specimens from Russia being smaller and darker than those of Western Europe.

Mr. Stainton exhibited cases of two species of the long-horned moths. One case, which belonged either to the genus Adela or the genus Nemophora, was composed of several pieces of brown leaves added in succession : the larvæ inhabiting this sort of case were feeding on withered oak-leaves. The other case, which probably belonged to the genus Nemotois, was formed by successive additions around a brown oval nucleus, and was much contracted in the middle : the larvæ inhabiting this case were feeding on the green leaves of Ballota nigra. The Adela ? cases were found by Mr. Healy, at West Wickham, by searching amongst the fallen oak-leaves. The Nemotois ? cases were collected by Herr Schmid, of Frankfort-on-the Maine, around plants of Ballota nigra, the lower leaves of which were much eaten by them.

Mr. F. Walker exhibited a large box of North-American Hemiptera, and made the following remarks, which occurred to him while inspecting this collection :—" It is well known what a great affinity part of the fauna of North America bears to that of Europe ; and this likeness between the two faunas increases northward until they become nearly identical ; and there are indications that the separation between the eastern and western continents took place at a later period in the northern regions than in the southern regions. The separation between the northern fauna and the southern fauna is much less complete in the western countries than in the eastern countries ; and this is owing to the divisions in the latter by means of seas and mountains, which are comparatively wanting in the western continent. The fauna of the Central States of North America and that of the eastern slope of the Alleghany mountains appear to be equally similar to that of England ; and in the plains of the United States the faunas of the north and of the south are comparatively mingled together, whereas in the regions of the Old World they are nearly separate, and in the southern part the northern fauna only appears on the mountain ranges. I will conclude by

enumerating a few of the species in this box which appear to be most nearly allied to the British Hemiptera, or to be identical with them:—

Corimelæna unicolor
„ pulicaria
Ophthalmicus niger
Anthocoris pseudo-chinche
Neides spinosus
Lygæus linearis
„ bioculatus
Eurymerocoris nigritulus
Rhopalus maculigerus
Salda læta
Zosmenus latus
Tingis hyalina
Reduvius personatus
Nabis ferus
Hebrus americanus
Gerris apterus
„ marginatus
Ranatra fusca
Corixa annexa
Aphrophora quadrinotata
Psylla diaphana

The American Reduvius personatus seems to be sufficiently distinct from the British species to be entitled to receive a new name."

May 6, 1861.

J. W. Douglas, Esq., President, in the Chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the respective donors:—'Transactions of the Linnean Society,' Vol. xxiii. Part 1; presented by the Society. 'Proceedings of the Royal Society,' Vol. xi. No. 43; by the Zoological Society. 'Proceedings of the Society, Part 3, 1860; by the Society. 'Observations on the Neuration of the Hind Wings of Hymenopterous Insects, and on the Hooks which join the Fore and Hind Wings together in Flight,' by Miss Staveley; by the Author. The 'Zoologist' for May; by the Editor. 'Notes on the Generative Organs, and on the Formation of the Egg, in the Annulosa,' Part 1, by John Lubbock, Esq., F.R.S.; by the Author. 'The Journal of the Society of Arts' for April; by the Society. 'The Athenæum' for March and April; by the Editor. 'The Entomologist's Weekly Intelligencer,' Vol. ix. and Nos. 235 to 239 inclusive; by H. T. Stainton, Esq.

Elections.

A. Murray, Esq., of Scotland Street, Edinburgh, was elected a Member; and James Arthur Laing, Esq., of Paragon Road, Blackheath, was elected a Subscriber to the Society.

Exhibitions.

Mr. Stevens exhibited some specimens of Saperda oculata from the Cambridgeshire fens, and observed that the species had not previously been taken in this country for about twenty years. He also exhibited two beautiful Cetonidæ, *viz.*, Tmesorrhina Thoreyi and T. Iris, from Sierra Leone; and three fine species of Paussus, from the coast of Malabar.

Dr. Wallace exhibited a specimen of Acherontia Lethe, said to have been found alive by a young lady at East Cowes. Being a native of the East Indies, it must have been accidentally imported into this country.

Mr. Haward exhibited a fine example of Euryporus picipes, found under decaying leaves on Sanderstead Downs.

Mr. Machin exhibited some interesting Micro-Lepidoptera, amongst which were Stigmonota interruptana, Coleophora vulneraria, an apparently new species of Gelechia, &c.

Mr. Stainton exhibited larvæ of two species of Micropteryx mining in birch-leaves. He remarked that they were perfectly apodal, tapering towards the tail. The mine, at first a slender gallery, eventually became a large blotch, in which the excrement assumed the peculiar appearance of a coil of black thread. These larvæ had often before been observed by Mr. Stainton and other Micro-Lepidopterists, but had always been neglected by them under the idea that they were Coleopterous.

In reply to a question from Mr. Westwood, Mr. Stainton stated that the Lepidopterous larvæ to which these were most nearly related were those of the genus Antispila.

Improved Breeding-cage.

Dr. Knaggs brought for exhibition one of the cages which he used for rearing the larvæ of Lepidoptera. It consisted of a glass cylinder, covered at its upper aperture with muslin fastened by twine or thread, in preference to elastic India-rubber rings, which are apt to break from dampness or long-continued contact with another surface; of an unglazed earthenware plate, with a perforation in the centre of sufficient size to admit of the food-plant being dragged through, so as entirely to block it up; twigs, &c., requiring to have a strip of linen twisted round them before they are passed through the opening; and of a jam-pot or other receptacle for water.

In his opinion there were many advantages over any breeding-cage he had hitherto seen or heard of, of which the absence of putrid water, which must always occur where damp sand is used, was the most important; dead larvæ, frass, &c., could be at once removed; there was a good footing on the unglazed plate, on which larvæ could not only crawl with ease, but could not become entangled, as to their legs, with webs, grains of sand (damp or dry), or cotton wool; by simply lifting cage, larvæ, food and all, from the water, the ends of the plants might be clipped off with a pair of scissors, and the cage placed into another jam-pot of pure water; and he suggested that if this were done about every other day the food would keep perfectly fresh for at least a fortnight; in fact, although the plant obtains the amount of moisture it requires, the cage remains dry. Amongst other advantages may be mentioned facility for the observation of larval habits; great economy of time and labour; great economy in price, thereby allowing a far larger number of cages for the same expenditure, so that species, and even individuals when necessary, may be kept separate; cleanliness, free access of air and light, &c.

On the score of economy he strongly recommended them; the cylinders, being the cut-off bottoms of glass shades, were of course almost unsaleable articles, so that, at any rate at present, they might be obtained for a sum varying from a penny to a shilling, according to size.

With regard to the unglazed plates (the ordinary state in which stock is kept), they might be got from the manufacturers; he would advise, however, that those of the best make should be procured, as being flatter; ingenuity would soon make holes

in them, which might be done either by a drill or by a stock and countersink. The prices he paid for the best unglazed plates vary from 1*s.* 6*d.* to 2*s.* 6*d.* per dozen, according to size.

The following papers were read by the Secretary :—

"Notes on the Distribution of Insects in the Channel Islands," by F. Walker, Esq.

"On the Euphorbia-infesting Coleoptera of the Canary Islands," by T. V. Wollaston, Esq.

June 3, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Sitzungsberichte der Konigl. bayer Akademie der Wissenschaften zu Münnchen,' 1860, Heft 4, 5 ; presented by the Academy. 'Proceedings of the Berwickshire Naturalists' Club,' vol. iv. No. 4 ; by the Club. The 'Zoologist' for June ; by the Editor. The 'Journal of the Society of Arts' for May ; by the Society. The 'Athenæum' for May ; by the Editor. 'Catalogue of British Coleoptera,' sheets O and P, two copies ; by the Author, G. R. Waterhouse, Esq. The 'Journal of Entomology,' No. 3 ; by the Proprietors.

Exhibitions.

The President exhibited, on behalf of Mr. Charles Fenn, a specimen of Saturnia Carpini, the wings of which on the left side presented the coloration of the female of that species, whilst those on the opposite side, the structure of the antennæ, &c., agreed precisely with the male insect.

Mr. Lubbock observed that he believed none of these apparent hermaphrodites had been anatomically examined, and he thought it would be very interesting to ascertain how far the disposition of the internal organs corresponded with the external peculiarities.

Mr. Bond exhibited two remarkably large male examples of Ennomos illunaria, bred by the Rev. Joseph Greene from pupæ found at the roots of a lime tree at Newrath Bridge, near Wicklow ; also two species of Eupithecia, which had been recently determined by Mr. H. Doubleday to be the E. tripunctata and E. trisignata of Herrich-Schæffer.

Dr. Knaggs exhibited drawings of the larvæ of these Eupitheciæ, executed by the Rev. H. Harpur Crewe, who had found them on Angelica sylvestris ; and the larva of E. helveticaria, also received from Mr. Crewe.

Sir John Hearsey exhibited a number of beautiful drawings of the transformations of Indian Lepidoptera, with their food plants, executed from nature by the members of his own family.

Mr. Solomon exhibited specimens of Ammæcius elevatus, from Southport Sands, near Liverpool ; and Staphylinus latebricola and S. fulvipes, taken near Folkestone.

Mr. Solomon also exhibited, on behalf of the captors, Messrs. D. and H. Moses, examples of Byrrhus Dennii, taken on Clapham Common, and a fine specimen of the rare Myrmedonia Haworthii, found under dead leaves in Dulwich Wood.

The President exhibited Micropus sabuleti, *Fallen*, an hemipterous insect new to the British list, although taken several years since by Mr. Wollaston in Dorsetshire; it was also captured by Dr. Power, at Merton, in 1859, and by Mr. G. Lewis, near Folkestone, in 1860. About one insect in twenty only has wings, a peculiarity noticed by Fallen.

Mr. F. Smith exhibited a living example of Aspidomorpha Sta. Crucis, a splendid Cassida from India, lately received at the British Museum, and the only one of a number sent which reached this country alive.

Sir J. Hearsey observed that he had frequently noticed this beautiful species in India, and that when his family visited the subterranean temples of Salsette they found it in some abundance on the island.

Mr. Waterhouse exhibited a series of specimens of Ceuthorhyncus sulcicollis, *Gyll.*, and a series of another species very much resembling the C. sulcicollis, but differing so as to lead him to regard it as a distinct species. The first mentioned insect is common in the London district, and is found on the Erysimum officinale and perhaps some other plants; the second insect Mr. Waterhouse had met with at Highgate, in the neighbourhood of Box Hill, Surrey, and at Northfleet in Kent, always on the Erysimum Alliaria, and always unaccompanied by the C. sulcicollis. Its most obvious points of distinction consist in the constantly pitchy red colour of the tarsi, and the under parts of the body and the sides of the chest being very sparingly clothed with minute gray-white scales. In C. sulcicollis the under parts are pretty densely clothed with pale scales, and the little triangular plate on the side of the chest, which partially separates the thorax from the elytra, is so completely covered with white or pale buff-coloured scales as to form a conspicuous pale spot at that part. These differences Mr. Waterhouse had formerly noticed when comparing a certain Ceuthorhynchus, presented to the British Museum by Mr. Walton, with the C. sulcicollis, but at that time he imagined Mr. Walton's insect (which was regarded by him as the C. tarsalis of Schönherr*) was a mere variety of the C. sulcicollis; he now finds, however, that the differences noticed are accompanied by others; the red-footed insect differs from C. sulcicollis in having the antennæ longer, the thorax more coarsely punctured, the pointed tubercles at the apex of the elytra less distinct, and the interstices of the striæ subgranular. The tarsi, moreover, are shorter and stouter, and the femora are more strongly toothed. The dark colour of the under parts, owing to the scarcity of scales, forms a marked difference when the under side of this insect is compared with that of C. sulcicollis, and when the male sex of each species is compared more important differences are seen. In the male C. sulcicollis the penultimate abdominal segment has two approximated small tubercles, and the last segment is concave in the middle third, the concavity being bounded on each side by a slightly raised ridge; the chest, moreover, is slightly concave; in the other Ceuthorhynchus the chest is strongly concave in the middle; the penultimate abdominal segment is simple, and the concavity on the last segment is bounded on either side by a well-marked conical tubercle; the under parts are likewise less thickly punctured. The C. picitarsis of Schönherr is compared by its describer to the C. sulcicollis, from which it differs in having the tarsi pale ferruginous, and in having the under parts of the body very sparingly scaled, and so far agrees with the insect to which attention is directed; but C. picitarsis is

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* On a former occasion Mr. Waterhouse called the attention of the Society to what he believed to be the true C. tarsalis.

said to be somewhat smaller than C. sulcicollis, the elytra to be glossy olivaceous-black, with the interstices of the striæ distinctly transversely rugulose, the legs somewhat slender, and the femora armed with a minute tooth, characters which do not apply to the insect exhibited; it appears, in short, to be undescribed, and Mr. Waterhouse proposed for it the name inornatus. The leading characters are as follows:—

CEUTHORHYNCHUS INORNATUS.

C. niger, parum nitidus, subtus parce albido-squamosus; tarsis piceo-ferrugineis; thorace profundius punctato, canaliculato, obsolete bituberculato; elytris subsulcatis, interstitiis rugulosis subgranulatis, apice indistincte muricatis; pedibus validis, femoribus fortius dentatis.

The Secretary read a paper by T. V. Wollaston, Esq., intituled "On the Ptinidæ of the Canary Islands."

July 1, 1861.

G. R. WATERHOUSE, Esq., V.P., in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors: 'Exotic Butterflies,' Part 39; presented by W. W. Saunders, Esq. 'Journal of the Proceedings of the Linnean Society,' Vol. v. No. 20, and second supplement (Botany); by the Society. 'List of the Specimens of Lepidopterous Insects in the Collection of the British Museum,' by Francis Walker, F.L.S., &c., Part xxii. (Geometrites); by the Author. 'The Zoologist,' for July; by the Editor. 'Liste des Hyménoptères Recueillis en Sicile par M. E. Bellier de la Chavignerie, pendant les mois d'Août et Septembre, 1859,' par le Dr. Sichel; by the Author. 'The Journal of the Society of Arts' for June; by the Society. 'Stettiner Entomologische Zeitung,' Vol. xxii. Nos. 4—6; by the Society. 'The Entomologist's Weekly Intelligencer,' Nos. 240—247; by H. T. Stainton, Esq. 'Report of a Lecture delivered by J. O. Westwood, Esq., M.A, F.L.S., Hope Professor of Zoology in the University of Oxford, on the Metamorphoses of Insects, at the Royal Institution of Great Britain, on Friday, May 24, 1861; by the Author. 'Pocket Catalogue of British Coleoptera;' by the Author, G. R. Waterhouse, Esq.

Vote of Thanks.

A cordial vote of thanks was passed to W. Wilson Saunders, Esq., for the liberal entertainment provided by him on the occasion of the Society's excursion to Reigate, on the 21st ult.

Election of a Subscriber.

Robert Hackshaw, Esq., of Merton Road, Kensington was balloted for, and elected a Subscriber to the Society.

Exhibitions.

Mr. Baly exhibited the type specimens of the new species of Hispidæ in Mr. Bowring's collection, described in the first part of the 'Catalogue of Hispidæ,' prepared by him for the Trustees of the British Museum.

Sir John Hearsey exhibited a large box of Indian insects of various orders, being a portion of the collection made by him during his recent service in that country.

Professor Westwood remarked that the box of insects exhibited by Sir John Hearsey contained many fine species, especially of butterflies, peculiar to Assam and the Darjeeling district of the Himalayas; likewise a specimen of Necroscia Tages, a spotted winged species of Phasmidæ, hitherto unique in the Hopeian Collection, as well as one of a new genus of Actetidæ of considerable size, also hitherto unique in the same collection; also specimens of each sex of the remarkable Lamellicorn Peperonota Harringtonii of Westwood, and a fine new Prionideous insect with spotted elytra.

Mr. F. Smith exhibited a specimen of the singular bee parasite Braula cœca, *Nitzsch.*, found in Devonshire on Apis Liguria. He stated that the species had not hitherto been recorded as an inhabitant of Britain; on the Continent it was found on the common honey bee, Apis mellifica, and it was rather singular that it was observed for the first time in this country on the recently imported species A. Liguria.

Professor Westwood observed that Germar's figure of this bee parasite was very indifferent; the best figure had been published in Italy, by M. Achille Costa, under the name of Entomobia apum (Storia completa del Entomobia apum e su i danni che arreca alle api da Miele; atti del R. istituto d'incoraggiamento, vol. vii. 1845).

Mr. Haward exhibited a series of specimens of Tillus elongatus, and suggested the probability of the dark individuals being specifically distinct.

Mr. Janson observed that Fabricius had described the so-called variety, having the thorax dark, under the name of "ambulans."

Mr. Haward remarked that he had captured thirty-seven examples of Ammæcius brevis under one clod of dried horse-dung, which circumstance he considered indicated its affinity to Aphodius.

Mr. Stevens exhibited some examples of Ceutorhynchus Crux, C. setosus, C. hispidus, &c., lately taken near Mickleham.

Mr. Stevens also exhibited some fine Lepidoptera, sent from the Cape of Good Hope, by Mr. R. Trimen.

Mr. Stevens announced that Mr. Trimen was about to publish a work on the butterflies of South Africa, to be intituled 'Rhopalocera Africæ Australis,' and added that he should be happy to receive the names of any members who might wish to become subscribers to this work, which it was intended should be completed in two parts, at five shillings and sixpence each.

Dr. Knaggs exhibited a drawing of the larva of Acidalia strigilata, made the day before it commenced forming its cocoon, and being the only one which he had succeeded in rearing from the eggs obtained by him last season.

Mr. Stainton exhibited a singular larva, mining in birch leaves, which he had received from Scarborough. The mine began at the tip of the leaf, became gradually broader till it swelled out into a blotch in the centre of the leaf, where the larva cuts out a round case formed of the two skins of the leaf. Mr. Stainton said he would not express an opinion as to the order to which the insect belonged; he had brought it for exhibition, in the hopes of getting some information concerning it, but he might remark that the mine more nearly resembled that of Tinea bistrigella than any other mine he knew.

Mr. Stainton also exhibited drawings of the singular gall-like swellings of the stems of Silene nutans, formed by the larvæ of Gelechia cauligenella. Mr. Stainton remarked that there was nothing abnormal in the appearance either of the larva or perfect insect, though its habits were so singular. There was no apparent opening into the gall, the

larvæ evidently effecting their entrance there whilst very young and when the plant was beginning to grow up. When the larvæ were full fed they ate their way out of the gall.

Mr. McLachlan exhibited a series of a rare Trichopterous insect, Limnophilus incisus of Curtis = Colpotaulius excisus of Kolenati. These he took near Merstham, on the 21st ult.

Mr. McLachlan also exhibited a long series of Acentropus niveus, among which were two female examples, taken recently at the Hampstead Ponds, a new locality for this species; also bred specimens (with the cases) of Coleophora olivaceella, and the same of C. solitariella for comparison; and a bred specimen of Nepticula ulmivora, the larvæ of which, mining in elm leaves, he recently discovered for the first time in England, near West Wickham.

Captain Cox exhibited some excellent drawings of the larvæ of Lepidoptera, and remarked on the rarity of Lepidoptera during the present season, which was probably to be attributed to the cold and wet of the last summer.

Mr. Waterhouse observed that he never remembered to have seen so few Coleoptera as in the present summer; and Mr. Smith stated that Hymenoptera had hitherto been extremely scarce; other members present remarked that their experience confirmed these statements.

Professor Westwood observed that although mangold wurzel was usually considered almost free from insect attacks, yet the crops this season in many distant counties (Devon, York, Hereford, Oxon, &c.) were attacked by the larvæ of a Dipterous insect (fam. Muscidæ, and probably allied to Tephritis), which mine into the leaves, forming large blotches, which soon shrivel up. It was evident, therefore, that the previous season had exerted no influence in checking the production of this obnoxious species, and in like manner the Aphis of the cherry and plum, and the black Aphis of the bean, as well as the gooseberry sawfly, had been most extensively abundant and injurious this season.

Mr. McLachlan read the following:—

Remarks on the Supposed Influence of the Food of the Larvæ in causing Variation in Lepidoptera.

"The Natural History of Coleophora olivaceella appears to have some bearing on the question so often asked at our meetings, 'Are not many of the so-called species of Micro-Lepidoptera merely modifications of one or more previously described species produced by the larvæ having fed on different plants?' It appears to me that, as has often been said before, this question would never have arisen but for the almost microscopic dimensions of the creatures; and at the same time I would premise that I am decidedly opposed to the creation of species on imaginary differences, and that it is possible that some few, now considered distinct, may, when their habits become more known, sink to the rank of varieties; but that food has any more than the very slightest influence in causing such variation is, I think, very doubtful. Coleophora olivaceella is an insect which, in the perfect state, is very similar to C. solitariella, and, moreover, the two larvæ feed for at least the greater portion of their existence as such simultaneously on the same plant (Stellaria Holostea); but the cases of the larvæ and their mode of feeding are so very different that all who believe in species at all must consider them distinct. These differences are not worth pointing out here; they have already been elaborately detailed by Mr. Stainton in the 'Entomologist's Annual'

and 'Intelligencer,' and by M. Fologne in the 'Transactions de la Société Entomologique Belge.' Take again Nepticula ulmivora, which is extremely similar to N. marginecolella, and both larvæ mine at the same time in elm leaves, sometimes sharing the same leaf, yet the larvæ differ in colour, and mine in a distinct method, and each larva invariably produces an imago having small though constant distinctive characters, so that no one can believe them identical.

"Similar instances might be multiplied among the Micro-Lepidoptera almost *ad infinitum*. Yet it is constantly hinted that two insects, which—in addition to having equal peculiarities with those before mentioned—feed in a different plant, may be only varieties of one caused by the latter circumstance. Now, on the contrary, does it not seem more natural to suppose that, if there were doubt about the matter, this should rather turn the scales, and cause us at once to consider them distinct? In many genera in which the individual species vary the least the larva of each species affects many different plants, the specimens bred differing only slightly in size and depth of colour. And, again, as far as my small experience goes, the species of other genera have each their own food-plant, or perhaps frequent one or two closely allied species. That differences so great as even to be called varieties can be produced by change of food I must believe to be impossible. All who have paid any attention to breeding Lepidoptera will readily say how impossible it is to produce varieties at will, and how an occasional specimen will make its appearance with such peculiarities of form and markings that, had it been taken at large, with no knowledge of its previous history, it would have stood a fair chance of remaining undetermined or described as new, but which has been bred from the same brood of eggs kept under precisely the same circumstances. And certain species of Peronea are familiar instances of the imago varying to such an extent that scarcely two can be found precisely alike, while the larvæ feed on the same plant and present no differences. On the other hand, in certain genera, for instance Eupithecia, in many species the larvæ, though reared from the same brood of eggs and fed together on the same plant, will vary as much as the imago of Peronea, yet the perfect insects produced from these are identical in appearance. From these and a thousand other instances that might be cited, it does appear to me that variation caused by the food of the larva does not exist, except as to size and tone of coloration, and that any differences in the the number, position and direction of fasciæ or spots, in which consist the distinctive characters of most of the Micro-Lepidoptera in question, can be caused by this means is, as said before, open to the gravest doubts. That such variation can be caused in one or two generations seems to be quite impossible; and, supposing that any influence can be exercised in this way, it could only be in the course of ages, which theory, however ingenious, and perhaps truthful, it may be, is unfortunately from its very nature incapable of proof."

Professor Westwood observed, with reference to the views advanced by Mr. McLachlan, in the paper just read, that he had endeavoured to guard himself from misapprehension in speaking of the modification of species produced by change of food. He had indeed given it as his opinion that such a change was capable of occurrence in certain species, although he was in no position to attest it as a fact. In stating that it was difficult to meet this argument, owing to the minuteness of the Micro-Lepidoptera, Mr. McLachlan had overlooked the fact of the great variation occurring in the largest species of Papilio, as well as Mr. Bates' statement of the variation of the Amazonian butterflies, produced, as had been supposed, by a comparatively small geographical range, but which Mr. Westwood was inclined to attribute to other causes, seeing

that in Africa the same species ranges unchanged over a great part of the continent. He considered that careful experiments as to the powers of modification of species resulting from variations of food would produce important results. He had looked in vain for any structural variation in many of the larvæ of the same genera published by Mr. Stainton, a difference in colour and a variation in the form of the mine or case (all of which might be induced by the variation of the leaves on which the insects fed) being in many cases the only appreciable differences.

Mr. Desvignes communicated a paper intituled "Descriptions of New Species of Bassus."

Part IX. of the current volume of the Society's 'Transactions' was announced as published.

August 5, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Proceedings of the Royal Society,' vol. xi. No. 44; presented by the Society. 'Proceedings of the Zoological Society,' 1861, part 1; by the Society. 'Sitzungberichte der Königl. bayer. Akademie der Wissenschaften zu Münnchen,' 1861, 1; by the Academy. 'The Natural History of the Tineina,' vol. vi.; 'The Entomologist's Weekly Intelligencer,' Nos. 248—252 inclusive; by H. T. Stainton, Esq. 'The Zoologist' for August; by the Editor. 'Anatomisch-Physiologische Unterserchungen über den Athmungsprozess der Insekten,' von H. Rathke; by the Author. 'Die Metamorphose des Caryoborus (Bruchus) gonagra, *Fabr.*,' von H. L. Elditt; by the Author. 'Schieften der Königlichen Physikolisch-ökonomischen Gesellschaft zer Königsberg,' Erster Jahrgang, Abth. 1 and 2; by the Society. 'The Athenæum' for July; by the Editor.

Election of a Subscriber.

John G. Grenfell, Esq., of the British Museum, was elected a Subscriber to the Society.

Exhibitions.

Mr. Bowring exhibited a box of Coleoptera from Penang, including many interesting species of Longicorns, some remarkable Cetonidæ and Cassididæ, a new species of Paussus, &c.

Mr. Stevens exhibited a splendid series of Buprestidæ, from the neighbourhood of Adelaide, containing upwards of fifty species.

Mr. M'Lachlan exhibited drawings of the larvæ of Eupithecia pusillata, E. dodoneata, Charadrina blanda and C. alsines, executed by the Rev. H. Harpur Crewe.

Mr. Stainton exhibited two examples of a Noctua, taken in the fens of Norfolk, at the end of June, by Messrs. Winter and Crotch, and which is believed to be the Nonagria Elymi of Treitschke. a species hitherto only found on the shores of the Baltic.

Mr. Fereday exhibited a singular Polyommatus, which he believed to be a hybrid produced from P. Alexis and P. Ægon; also two fine varieties of Tæniocampa munda, found on sallow blossoms near Croydon.

Mr. Smith sent for exhibition, preserved in spirits, the example of Aspidomorpha Stæ Crucis which he had exhibited alive at the June Meeting of the Society, and communicated the following particulars respecting it. "This insect was fifty-six days on the voyage to this country, and lived for sixty days after its arrival, making in all one hundred and sixteen days, with no other nourishment than a little moisture. During the last week or ten days of its life the bright golden lustre became dull copper, or rather dull tarnished gold, but when I found it dead it had regained all its golden brilliancy, which it retains in the spirits."

Mr. Bond exhibited the sexes of a new species of Gelechia, allied to G. pictella, taken by Mr. Barrett on the sand hills, near Dublin, and for which Mr. Stainton had proposed the specific title of "Tarquiniella."

The President exhibited a specimen of a Spilonota allied to S. dealbana, but distinct from any recorded British species. He had recently casually captured this insect at Mickleham, and was informed that specimens of apparently the same species had been taken last season at Deal, frequenting fir trees, and that Mr. M'Lachlan had also taken and bred a similar species from larches at West Wickham Wood.

The President also exhibited the following Coleoptera and Hemiptera:—Scraptia fusca and Abdera 4-fasciata, from the Purley Oaks, near Croydon; Myrmedobia coleoptrata, *Fallen* (Anthocoris exilis, *Fallen*), from Mr. Wollaston's collection, a rare species living with ants, and the sexes of which are so dissimilar thet they have been placed in different genera; and Microphysa pselaphoides, taken in ants' nests by Dr. Power.

Professor Westwood exhibited two larvæ of Œstrus hominis, which he had received (by the hands of Dr. Hagen) from Count Osten-Sacken, Russian Minister at Washington, who had obtained them from Dr. Leconte, who had himself received them from Honduras. The larvæ clearly belonged to the family Œstridæ, but differed from the ordinary forms in the greater elongation of the narrow anterior parts of the body and the remarkably strong rows of reflexed spines with which the segments of the hind part of the body are armed. Many accounts have from time to time been published of the occurrence of larvæ, supposed to be those of a species of Œstrus, in the human body, but Professor Westwood recollected no instance of a description of the larva being published, sufficiently precise to allow of satisfactory identification. He had indeed been led to the belief that in these recorded cases (certainly so in that of M. Procé) larvæ of Muscidæ had been mistaken for Œstri, as it was not improbable that a blow-fly would deposit its eggs either in a slight wound on the body of a sleeping person, or upon the parts covered by a more delicate skin than the other parts of the body, or if the larva was really that of an Œstrideous insect some quadrupedal bot-fly, under pressure of a necessity for the deposition of her ova, might have accidentally been led to lay them upon a human body. The examination of the larvæ sent by Count Osten-Sacken seemed to prove that these ideas were erroneous, and that a bot-fly does exist

distinct in its larva state from any hitherto described which is found in the human body.

(Since the exhibition of the specimens in question Mr. Bates has informed Professor Westwood that whilst on the Amazons he was attacked by one of these Œstrideous larvæ, which formed a tumour upon the calf of his leg, which suppurated, and the scar of which is still visible. He had also extracted one from the fleshy part of the back of a negro girl who helped in his house. He was induced to believe that the species was only an accidental intruder in such a position, and that it was truly parasitic upon the howling monkeys, as he had killed one of those animals and found its body infested with a number of apparently the same kind of larvæ. What a curious illustration does this statement afford, if correct, of the relationship of man and the monkey!)

Dr. Knaggs exhibited a box of Australian Coleoptera, collected in the neighbourhood of Sidney by Dr. Pittar.

Dr. Knaggs also exhibited a series of Nonagria (?) Bondii, of which several specimens were females; and a specimen of Acidalia strigilata, for the first time in this country, bred by himself from the egg; also both sexes of Acentropus niveus, and made the following statements in support of the opinion that this species belongs to the order Lepidoptera: — "*First*, that it appeared from the beginning until the third week in June; that it then disappeared, or nearly so, for about a month, when it again made its appearance; which was precisely his experience of Paraponyx stratiotalis, &c. *Secondly*, that the eggs of Acentropus were laid on the setting-boards as, and had a most striking resemblance to, those of P. stratiotalis (eggs of both species were exhibited). *Thirdly*, that although its usual habit, when flying, was to keep close to the surface of the water, as Psyche does to land, yet, like Psyche also, he had occasionally seen it mount perpendicularly into the air, rising higher and higher until lost to sight. *Fourthly*, that when 'boxed' it rubbed its thorax in true Lepidopterous fashion."

Mr. M'Lachlan and other members present remarked that the observations of Dr. Knaggs, relative to the flight of this species and its liability to injure itself when confined in a pill-box, would apply equally well to many of the Phryganidæ.

Mr. Shepherd read a letter from Mr. G. King, announcing the capture of specimens of Leucania putrescens at Torquay.

The Secretary read a communication from Lord Dunsany, dated from Navan, Ireland, August 2nd, 1861, accompanying specimens of the larva of Biston hirtarius, and stating that these caterpillars were first noticed in that neighbourhood in 1858, but in small numbers; in 1859 (a remarkably dry season) they were very numerous; in 1860 none were seen; but this year, the spring having been dry, they have appeared in immense numbers, and at the present time plantations of large ash trees are stripped of their leaves by them as completely as they would be in mid-winter.

September 2, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'The Journal of the Royal Agricultural Society of England,' vol. xxii. part 1; presented by the Society. 'Stettiner Entomologische Zeitung,' 1861, Nos. 7—9; by the Society. 'The 'Zoologist' for September; by the Editor. 'Beschrijvingen en Afberldingen van Nederlandsche Olinders, bijeengebragt door Mr. S. C. Snellen Van Vollenhoven, Conservator aan's Rijks-Museum voor Natumlijke Historie te Leyden;' by the Author. 'The Journal of the Society of Arts' for August; by the Society. 'The Entomologist's Weekly Intelligencer,' Nos. 253—256; by the Editor, H. T. Stainton, Esq.

Exhibitions.

Mr. Scott exhibited the following Hemiptera, hitherto unknown as British species, *viz.*:—

Acetropis carinata, H.-Sch. = *Lopus carinata*. Found by Mr. Marshall in the New Forest.

A. seticulosa, Fieb. Also taken by Mr. Marshall in the New Forest.

Piezostethus bicolor, Scholtz. (*Xylocoris*, H.-Sch.) Taken by himself beneath bark, at Abergavenny, in September last.

Anthocoris austriacus, Hahn. Beaten from oak trees at Wickham this month. It appears to be a very common species.

The President exhibited a specimen of a large Noctua, Orodesma apicina, *Guen. MSS.*, found alive in the London Docks, on board a vessel recently arrived from Porto Rico. It was, he remarked, the same species as was exhibited at a former meeting of the Society by Dr. Allchin, and recorded in 'The Entomologist's Weekly Intelligencer' by Messrs. Edmonds and Hodgkinson. The only known specimens have been captured in England.

Mr. M'Lachlan exhibited two new British species of Phryganidæ, *viz.*, Agrypnia picta, *Kolen.*, of which a specimen was taken on Skiddaw in 1859 by Mr. T. Chapman, and Leptocerus fulvus, *Rambur*, of which many specimens were taken during the month of August at Ruislip, Middlesex, by Mr. P. C. Wormald.

Mr. Stevens exhibited fine examples of Dicranorrhina Layardi from South Africa, and a new species of Paussus from Rangoon.

Mr. Stevens also brought for distribution amongst the members some specimens of Triplax russica, lately bred from Fungi.

Mr. Stainton exhibited a fine pair of Nonagria Elymi, sent from Stettin. He observed that the species had during the present season been discovered in Britain, and he had exhibited two wasted indigenous examples at the previous meeting of the Society.

Mr. Stainton also exhibited a male example of Lasiocampa Quercus, received from the Rev. F. O. Morris, having the antennæ much shorter than usual; they had not however been subjected to microscopical examination.

Mr. Bond exhibited examples of Lithosia caniola and Dianthœcia capsophila, captured near Dublin by Mr. Barrett. The first-mentioned species was noticed as a native of Britain for the first time by Mr. Henry Doubleday (Zool. 7407).

Dr. Knaggs exhibited a Noctua, allied to Hadena protea, but evidently distinct from any known British species, taken by Mr. Barrett near Dublin. He had been unable to identify it with any species contained in the general collection at the British Museum.

Mr. Brettingham exhibited a large box of Coleoptera from Assam.

Professor Westwood exhibited two examples of a large North-American species of Sphex, from the Oxford Museum, the bodies and limbs of which he had lately noticed to be covered with pollen masses. Instances of the adhesion of the anthers of flowers to the heads of insects had been brought before the Society on former occasions, but he had hitherto never seen any instance of the whole insect being covered with them.

M. F. Walker communicated some notes on the habits of Lipara lucens, Chlorops tarsata, Limnophora mediteroides, and their parasites, with descriptions of the insects.

October 7, 1861.

John Lubbock, Esq., Vice-President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Transactions of the Zoological Society of London, Vol. iv. Part 7; 'The Proceedings of the Scientific Meetings of the Zoological Society of London, 1861,' Part ii.; presented by the Society. 'Proceedings of the Literary and Philosophical Society of Liverpool, during the Fifteenth Session, 1860-61,' No. xv.; by the Society. 'Proceedings of the Royal Society,' No. 45; by the Society. 'The Zoologist' for October; by the Editor. 'Descripçao de dois Insectos Coleopteros nas Costas orientaes do Oceano Indico, pelo Barao do Castello de Paiva, Professor de Botanico na Academia Polytechnica do Porto;' by the Author. 'Smithsonian Contributions to Knowledge,' Vol. xii.; by the Smithsonian Institution. 'The Journal of the Society of Arts' for September; by the Society. 'The Athenæum' for August; by the Editor. 'Sitzungsbreichte der Königl. bayer. Akademie der Wissenschaften zu München;' by the Academy. 'The Entomologist's Weekly Intelligencer,' Nos. 257—260; by H. T. Stainton, Esq.

Election of a Member.

James Rome, Esq., M.A., &c., Woodlands, Hamilton, Lanarkshire, was elected a Member of the Society.

Exhibitions.

Mr. Pascoe exhibited a number of Coleoptera, selected from a large collection (about 1300 species) which he had made, during the preceding winter, in the South of France (Dep. du Var). One of these, the true Carabus vagans, is not found in the mountains, as M. Léon Fairmaire has stated in his 'Faune Française,' but in the low-lying ground near the sea, especially delighting to hide under the large leaves of the artichoke, in which situation it is often found in considerable quantities. An Anophthalmus (A. Raymondi, one of the numerous discoveries of that most indefatigable naturalist, M. Raymond), is found very sparingly in a small limestone cavern near Hyères: it is well worthy of note that the same species has been taken in the cellar of an old monastery at Marseilles: like all the blind beetles it runs very rapidly, and can only be taken with difficulty. Another recent discovery of M. Raymond's, Anillus Gallicus, *Aubé*, also blind, is only found beneath very large stones deeply embedded in the earth. Amaurops Aubei, one of the Pselaphidæ, and blind also, as its name implies, is found, but very rarely, beneath the bark of old pine-stumps (*Pinus halepensis*). Faronus Lafertii, a very remarkable Pselaphidean, resembling a Staphylinus, was not unfrequently found at the roots of grass, often associated with Thorectus grandicollis, *Germ.*, and Trotoma pubescens, *Kiesw.*, the latter sometimes in considerable numbers. Two insects belonging to families which in England are mostly found on flowers, Atelestus hemipterus, *Er.*, and Anthicus Genei, *Laf.*, may often be seen during the month of May running rapidly over stones on the coast within a few inches of the sea.

Mr. Pascoe also called especial attention to the fine, and until recently excessively rare, lamellicorn Callicnemis Latreillei, *Lap.*: this insect, he stated, was only to be found a very short time during the month of May, appearing for a few minutes on the sands at St. Raphael, just as the dusk was deepening into night; they disappeared immediately at the approach of a light, burying themselves in the loose sand from which they had just emerged: they only came out when the night was perfectly calm, and it was singular that while at Hyères they were only seen on the wing at St. Raphael they invariably confined themselves, as M. Raymond informed him (Mr. Pascoe), to crawling on the sand. Among the specimens which Mr. Pascoe exhibited were Antidipnis rubripes, *Perris*, found in the sand at the root of an Artemisia, and A. Javeti, *du Val*, from which it is perfectly distinct; Ptilium filiforme, a new species named but not yet described by Dr. Aubé, first found by M. Raymond in sand close to the sea; Theca byrrhoides, *Aubé*, a new genus allied to Dorcatoma, a single specimen of which he (Mr. Pascoe) had taken at St. Raphael; Chœrorhinus squalidus, *L. Fairm.*; Auletes cisticola, *L. Fairm.*; Julodis Onopordi, *Fab.* (from Toulon); Lema Hoffmannseggi, *Lac.*, and Ceutorhynchus Raphaelensis, *Chev.*; the latter, originally discovered by M. Raymond at St. Raphael, on young plants of the Glaucium luteum, and by carefully turning back the leaves of the unexpanded bud Mr. Pascoe stated he invariably found one or more individuals on every plant which he examined at Hyères.

Glaucium luteum, or yellow horned poppy, abounds on many of our shores, and as this Ceutorhynchus has been recently found on the same plant at Paris, it is not unlikely that it may be added to our Fauna; the south coast of the Isle of Wight would seem to offer a very favourable locality.

Mr. Miller exhibited a small and beautiful moth of the family Geometrina, said to have been bred from a larva found in the vicinity of London, which fed on the exterior of the bedeguar, or mossy gall of the rose; it had been examined by Messrs. Doubleday and Newman, and considered by them as a species not yet known as an inhabitant of Britain.

Mr. Shepherd believed this insect would prove to be an extraordinary variety of Ephyra pendularia.

Messrs. F. Bond and S. Stevens were of the same opinion.

Professor Westwood remarked that at the meeting of the Society on the 4th of February last, Mr. Smith had sent for exhibition what were considered to be small pupa cases found attached to wasps' nests by Mr. Stone; he was now enabled to state that they were the eggs of the dipterous genus Volucella, well known to be parasitin in wasps' nests, Mr. Stone having forwarded to him the larvæ produced from them, which were undoubtedly those of Volucella. Professor Westwood exhibited the larva, which he observed was well figured by DeGeer, 'Histoire des Insectes,' Vol. vi. plate 3. Professor Westwood had also been informed by Mr. Stone that he had found Anthomyia incana to be parasitic in wasps' nests; and the same accurate observer had detected the larva of Ilythia sociella in a nest of Bombus sylvestris; the cocoons of this moth had been frequently found in the vicinity of humble bees' nests, but he (Professor W.) had not previously heard of the larva having been actually discovered in the nests.

Professor Westwood also observed that he had, at the meeting of the Society on the 2nd of August, 1858, exhibited a mutilated Strepsipterous insect, sent to the late Mr. Spence by Herr Neitner, of Ceylon, who had found the specimen issuing from the body of a Formica found in that island. Professor Westwood had at the same time read a description of the insect, and published figures in the 'Transactions,' forming for its reception the genus Myrmecolax. He had lately received from Herr Neitner an ant having one of these parasites protruding from the end of the abdomen; this he had had the pleasure of extracting, and exhibited it to the Meeting; he also found the head-cap of the pupa of a second specimen, proving that there had been two of the parasites within the ant. Professor Westwood added that he was now enabled to state, from the examination of this perfect example of the Stylops, that the figures and description he had published, from the damaged insect received in 1858, were on the whole tolerably accurate. He called especial attention to the remarkably large antennæ of this insect, exceeding those of any other genus of Strepsiptera.

Dr. Wallace read a list of rare or reputed British Lepidoptera which he had lately seen in a collection formed by a farmer in Suffolk; it included Papilio Podalirius (said to have been captured near Seven Oaks, Kent), Parnassius Apollo (said to have been taken in the Forest of Dean), and many other species of extremely rare or doubtful occurrence in Britain.

Dr. Knaggs exhibited living larvæ of the following species of Eupithecia, received from the Rev. Joseph Hellins, of Exeter, *viz.*:—E. tripunctata, E. expallidata, E. virgaureata, E. subfulvata and E. succenturiata. Dr. Knaggs pointed out the differences in the larvæ of the two last-named insects, which are by some entomologists

considered to be varieties of one inconstant species: he stated that Mr. Hellins had noticed the larva of E. succenturiata, which feeds on mugwort, preferring the seeds, to be infested by an hymenopterous parasite, the larva of which, when full fed, eats its way out of the caterpillar and constructs a cocoon on its back; he had on one occasion noticed a larva of the moth devouring one of the cocoons on the back of its neighbour, evidently mistaking it for a seed of the plant, which it exactly resembles in form.

Dr. Knaggs also exhibited the living larvæ of Clostera anachoreta, reared from the eggs deposited by a female bred during the present summer.

Mr. Waring exhibited some beautiful specimens of Noctua sobrina, N. neglecta and Ypsolophus juniperellus, taken in Scotland by Mr. Bouchard, during the past summer.

Mr. Waterhouse stated that he was anxious to correct three errors in his Catalogue of British Coleoptera, which had lately come to his knowledge; they consist of three species introduced into the list upon the authority of other entomologists, *viz.*:— Homalota subterranea, *Mulsant;* Haploglossa rufipennis, *Kraatz*, introduced on the authority of Mr. Janson; and Ceuthorhynchus uliginosus, *Walton*, taken from Mr. Walton's list of British Curculionidæ.

The Homalota subterranea of Mr. Janson I find, from the inspection of a specimen received from Mr. Janson by the British Museum, is the same as Homalota scapularis of my Catalogue.

The Haploglossa rufipennis of Mr. Janson is = Haploglossa pulla of my Catalogue, and is clearly not identical with H. rufipennis of Kraatz, of which there are specimens received from Dr. Kraatz in the Museum collection. The insect sometimes has the elytra pitchy black and sometimes rufescent, and has been recently taken in considerable numbers by Mr. Brewer, Mr. Rye and Mr. Lewis, always in the vicinity of the nests of the sand martin.

Ceuthorhynchus uliginosus of Walton is represented by a specimen presented by Mr. Walton to the British Museum, which I have carefully examined, and which proves to be Cæliodes didymus. It has a distinct rostral groove continued to the middle coxæ. A second specimen, named by Mr. Walton, is in Mr. Dale's collection, and has been kindly forwarded to me by its owner for examination; this is clearly a rubbed specimen of Ceuthorhynchus litura, as Mr. F. Smith had determined before I saw it.

Mr. Stainton read "A few Words on the Synonymy of Laverna Langiella."

Professor Westwood read descriptions of some new exotic Lucanidæ.

November 4, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Proceedings of the Royal Society,' Vol. xi.; presented by the Society. 'The Zoologist' for November; by the Editor. 'Notice of Blackwall's Spiders of Great Britain and Ireland;' 'On the recent Geologico-Archæological Researches in Denmark;' by John Lubbock, Esq., F.R.S.; by the Author. 'Journal of the Proceedings of the Linnean Society,' Vol. xi. No. 21; by the Society. 'The Journal of the Society of Arts' for October; by the Society. 'The Athenæum' for September and October; by the Editor. 'The Entomologist's Weekly Intelligencer,' Vol. x.; by H. T. Stainton, Esq. 'Catalogue Méthodique des Lépidoptères d'Europe pouvant être employé comme Etiquettes pour le Classement des Collections;' by M. Deyrolle.

Election of a Member.

Signor Antonio de Lacerda, of Bahia, Brazil, was elected a Member of the Society.

Exhibitions.

Mr. Kirby exhibited a large number of North American Lepidoptera, and remarked on the close resemblance between many of the species and those found in Europe.

Mr. M'Lachlan exhibited a female variety of Colias Edusa, destitute of the usual orange spots in the dark border of the wings.

Mr. Stevens exhibited a box of insects collected in Japan by Mr. Fortune, and observed it was the first collection from that country he had had the pleasure of exhibiting; it contained fine examples of the rare and singular Damaster Fortunei, and numerous other interesting Coleoptera, as well as two apparently new species of Papilio.

Mr. Reading exhibited specimens of Leucania putrescens taken at Torquay by Mr. King, and some rare Lepidoptera from South Devon, including Diasemia literalis, Heliothis peltigera, &c.

Mr. Reading also exhibited varieties of Pontia Napi, Colias Edusa (*var.* Helice), and a singular variety of Arctia villica, having the anterior wings entirely dark brown, the posterior pair being of the usual colour.

Dr. Knaggs exhibited a case of remarkable form, from Australia, believed to be that of a species of Psyche.

Mr. Miller exhibited some living larvæ of a species of Incurvaria found feeding on fallen leaves.

Mr. Adam White exhibited some insects, of various orders, collected by F. M. Rayner, Esq., Surgeon of H.M.S. 'Herald,' during its voyage of exploration in the South Seas. He especially noticed some from Aneiteum, New Hebrides, such as that interesting Longicorn, Psalidocoptus scaber. He showed other Longicorns from these islands, and the Pyrrha Wollastoni, from Lord Howe's Island, close to the genus Deucalion of Wollaston; Elytruri; Phasmidæ, such as Eurycantha australis, with its strange thickened hind femora and somewhat mole-cricket aspect, suggested ideas of analogy, now, since W. Sharpe Macleay had ceased to write, unfortunately little heeded

by naturalists. Mr. White considered these ideas, if developed by their illustrious author in a republication of his works with annotations, as likely to prevent the dangerous theories of Lamarck and his pupil, Charles Darwin, from ever affecting, except in a sanatory way, "our little systems," which "have their day and cease to be." He said a few words on his good friend Mr. Rayner's admirable collections of Crustacea, and expressed a hope that the Government would grant a sufficient sum to publish the valuable 'Natural History of the Voyage of H.M.S. Herald,' begun by John M'Gillivray, and carried on so successfully by Messrs. Rayner and Dr. Macdonald.

Mr. White also exhibited a beautiful Bombyx, allied to the Bombyx Certhia, *Fabr.*, figured by Petiver. This new species was brought from India, by General Sir John Hearsey, K.C.B., and for which he proposed the name of Brahmæa Hearseyi. It is smaller than the Brahmæa Wallichii, *Gray* (Bombyx spectabilis, *Hope*), and has three or four irregular undulating white lines in the apex of the fore wing, instead of three longitudinal lines of angled white Vs: he pointed out the black band behind this space being curved outwardly, instead of angled and irregular as in B. Wallichii.

Mr. White also exhibited a fine species of Phryganidæ, also brought from Northern India by Sir John Hearsay, with yellowish brown upper wings richly and thickly spotted and blotched with black; the lower wings black, with purple tinge, and a broad yellow band before the tip, widest on the fore part. He named it Holostomis M'Lachlani, in compliment to a gentleman who had done, and would yet, if he lived, do much to advance our knowledge of Trichoptera, and neuropterous insects in general.

Mr. White also exhibited the male and female of a beautiful Lycæna from New Zealand. It was allied to L. Sallustius, *Fabr.* (the L. Edna of Doubleday). The male of this lovely Lycæna is suffused with purple-violet, and has a row of red spots on both wings, and black marks and spots; the under side is *quiet* brown and gray. The female is larger, and has only a line of purple behind the tip of fore wings and parallel with its margin, and a macular line of violet on lower wings. Mr. White proposed for it the name Lycæna Boldenarum, after Helen and Frances Mary Bolden, the former for eighteen years his devoted wife, the latter for the last three years the wife of T. Corbet de Lacy, Esq., of Dunedin, in New Zealand. The last three exhibitions are of insects to be figured and described in the 'Proceedings of the Zoological Society.'

Mr. Waterhouse exhibited three species of Curculionidæ from Australia, and laid descriptions of them before the Meeting. The first he supposed to be the Strongylorhinus ochraceus of Schönherr; and the remaining two he regarded as members of a new genus, very closely allied to Strongylorhinus, but differing chiefly in having the rostrum curved, in the antennæ having the seventh joint of the funiculus confounded with the club-joints, in the second joint being short, and lastly, in the total absence of claw-joints to the tarsi. To this genus the name Atelicus was applied. The two species received the names A. inæqualis and A. ferrugineus.

A. inæqualis is described as being $5\frac{1}{2}$ lines in length, oblong, and of a pitchy black colour, but densely clothed with scales, partly of an ochraceous colour, and partly dark brown, giving a variegated appearance to the upper parts of the body. Thorax with the sides but gently rounded, the fore part constricted, the surface uneven and punctured; elytra striato-punctate, the alternate interstices unequally raised, and having four tubercles in a transverse line towards the apex. It is from Tasmania.

The second species, A. ferrugineus, is from Adelaide. Its length is $2\frac{3}{4}$ lines. In size and form it nearly resembles the small European insect known as Lixus rufitarsis of Schönherr: in colour it is of a somewhat deeper red than the Apion frumentarium: the head, rostrum, sides and under parts of the thorax clothed with yellow scales; a small spot at the humeral angle of the elytra, and a ring at the apex of each elytron are also formed by yellow scales: head and thorax with scattered punctures; elytra striato-punctate, and with the interstices flat.

Mr. Janson exhibited specimens of the following Coleoptera, brought by him before the Society on previous occasions under the names of Homalota subterranea and Haploglossa rufipennis, and made the following observations respecting them:—

"Homalota subterranea, *Muls.* This appears to coincide, as Mr. Waterhouse states, with an insect in the European Collection at the British Museum furnished by Dr. Kraatz, under the appellation of Homalota scapularis, *Sahlberg.* I had, however, prior to bringing the subject under the notice of the Society, carefully compared my specimen with the descriptions both of Sahlberg and Kraatz, and found disparities which precluded me from referring it to that species: thus, Sahlberg (Insecta Fennica, 372, 50) described his Aleochara scapularis as being 'barely one line long,' and as having the 'abdomen shining, scarcely punctulate,' and the characters attributed by Kraatz (Naturgesch. d. Ins. Deutschl. ii. 291, 100) are not in accordance with those presented by my example; finally, my specimen appeared to me to coincide well with both Mulsant's and Kraatz's descriptions of H. subterranea, and furthermore its occurrence in a nest of Formica flava led me unhesitatingly to refer it to that species: if, however, an insect received at the British Museum from Dr. Kraatz as the Homalota subterranea of Mulsant is really the species described by that author, it is not only specifically distinct from the insect to which I had applied that name, but pertains to a different section of the genus.

"Haploglossa rufipennis is not the species so designated by Kraatz, as I have convinced myself by a comparison with examples sent by him to the British Museum, but is perfectly distinct from an insect which I regard as the true H. pulla of Gyllenhal, being less coarsely punctate, having the antennæ conspicuously stouter, their articulations otherwise proportionate, &c., &c. The following synonymy of the two species will probably prove correct:—

"1. Haploglossa pulla, *Gyll.*

Aleochara pulla, *Gyll. Ins. Suec.* iv. 495, 56—57 (1827). *Fairm. et Laboulb. Faune Ent. Franç. Coleopt.* i. 451, 27 (1856)—but *not* of Kraatz or Waterhouse.

"2. Haploglossa nidicola, *Fairmaire.*

Aleochara nidicola, *Fairm. et Laboulb. Faune Ent. Franç. Coleopt.* i. 451, 28 (1856).

Haploglossa rufipennis, *Janson, Proc. Ent. Soc., Feb.* 6, 1860, *Zool.* 6957 (1860)—*nec* Kraatz.

Haploglossa pulla, *Kraatz, Naturgesch. d. Ins. Deutschl.* ii. 80, 2 (1856). *Waterhouse, Cat. Brit. Col.*—but *not* of Gyllenhal.

"The first is said by Gyllenhal to inhabit Fungi: the only indigenous specimen which I have seen, the one now exhibited, was given me by Mr. H. S. Gorham, who captured it in the Isle of Wight, he thinks, in an ant's nest beneath a stone, and who, I believe, has other examples.

"The second, M. Fairmaire informs us (*l. c.*), he found abundantly in the nests

of the sand martin at St. Valery-s.-Somme, and I have myself met with it crawling upon and at the base of sand banks inhabited by these birds, and have watched the beetles ascend the almost perpendicular walls of sand and enter the burrows in which nests were situate. Mr. May found it copiously in flowers, and I have several times taken it in those of the ragwort (*Senecio Jacobæa*)."

Mr. Tegetmeier called the attention of the meeting to a theory propounded by Principal Leitch to account for the development of a fertile queen-bee from an egg which would, under ordinary circumstances, have produced a sterile worker.

It is well known that bees deprived of their queen select several workers' eggs or very young larvæ for the purpose of rearing queens. The cells in which these eggs are situated are lengthened out and the end turned downwards. The larva undergoes its development in this perpendicular cell, which is capable of being entirely surrounded by the worker bees. It was found by experiment that the position of the cell was not of importance, as a fertile queen was developed with equal certainty when the cell was placed horizontally or even inverted, as when it remained in the natural pendent position. It was suggested that the more perfect development of the fertile larva was due to increased temperature, and that the object of the isolation of the cell was to allow its being entirely surrounded by a cluster of bees, whose rapid and increased respiration was productive of the warmth necessary to accomplish the growth of a queen.

In remarking on this theory, Mr. Tegetmeier stated that the idea of the development of a queen being dependent on the use of a food known as "royal jelly" appeared destitute of any foundation in fact, and that the theory which attributed the change to increased temperature produced by the clustering bees appeared supported by the fact that in rearing queens artificially several queen cells were usually situated closely together, and also that the production of fertile workers, which occasionally took place under these circumstances, might be regarded as dependent on the adjacent cells being subjected to a somewhat increased temperature by the clustering of the bees around the royal cells. He further stated that it had been ascertained by the use of delicate thermometers that a higher temperature existed in the neighbourhood of the queens than was found in any other part of the brood-comb.

Mr. M'Lachlan exhibited a fine series of Phryganidæ pertaining to the genus Stenophylax of Kolenati, and read descriptions of all the known British species, amongst which were two not hitherto recorded as natives of this country.

Mr. Adam White called attention to the injury caused to ginger root brought to this country from Cochin and Calicut by the larva of a small coleopterous insect, believed to be Lasioderma testaceum, *Steph.*; and to the damage done to macaroni by the rice weevil (*Sitophylus Oryzæ*). The depreciation of the crop of ginger root in value is computed at £3000 or £4000 annually; and a large consignment of macaroni from Genoa, which cost 5*d.* per lb., would, in its now damaged state, be gladly disposed of by its unfortunate owner for 1½*d.* per lb.

Mr. Desvignes communicated descriptions of two new species of Ichneumonidæ, pertaining to the genus Ephialtes.

Part 10, completing the fifth volume of the new series of the Society's 'Transactions' was on the table.

December 2, 1861.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Notice of some North-American Species of Pieris,' by Samuel Scudder, from the Proceedings of the Boston Society of Natural History, September, 1861; presented by the Author. 'The Journal of the Society of Arts' for November; by the Society. 'The Zoologist' for December; by the Editor. 'Stettiner Entomologische Zeitung,' 1861, Nos. 10—12; by the Entomological Society of Stettin.

Election of Subscribers.

James Fenn, Esq., of Clyde Villa, Lee; Charles Fenn, Esq., Clyde Villa, Lee; and Frank O. Ruspini, Esq., 85, Oakley Street, Chelsea, were balloted for and elected Subscribers to the Society.

Exhibitions.

Mr. Stevens exhibited a box of splendid Lepidoptera, sent by Mr. Wallace from Mysol, near New Guinea: the species were very similar to those previously sent home by Mr. Wallace from New Guinea and other adjoining islands. Mr. Stevens announced that Mr. Wallace was now at Batavia, and would probably return to England in the spring of next year.

Mr. Barnard exhibited an extensive series of Coleoptera from Smyrna.

Mr. Machin exhibited specimens of a Gelechia, and also of a Tinea, which he was unable to refer to any known British species; and an example of Æthia emortualis, *W. V.*, taken near Loughton, in Essex: this species has been erroneously recorded as a native of Britain by Haworth and subsequent authors; but the only authentic indigenous example known, with the exception of the one now exhibited, was captured by the Rev. H. Birks, of Henley-on-Thames.

Mr. D'Urban exhibited a large collection of South African Lepidoptera, including several new species of the genus Acræa, &c.

Mr. Adam White exhibited drawings, by Mr. Robinson, of a species of Mantispa, bred in some numbers from a nest of Polybia scutellaris, *Saussure* (Myrapetra scutellaris, *White*), a wasp said to collect honey; this fine nest was brought from Monte Video: of the economy of the Mantispa nothing is yet known.

Mr. White called attention to a remarkable beetle of the family Buprestidæ in the collection of Mr. Jeakes: it is near Anthraxia, having the epistome projecting and developed into two marked horns—a character quite novel in this family of Coleoptera. Length about 2½ lines. For the reception of this insect, which is from Santarem, Mr. White proposed to found a new genus, and dedicate it to the gentleman in whose collection it is contained.

Mr. S. Stevens exhibited a specimen of Adelops Wollastoni, *Janson*, found by Mr. John Stevens, under dead leaves in a market garden at Hammersmith.

Professor Westwood observed that Hammersmith appeared to be a far richer entomological locality than the neighbourhood of Oxford; since his removal from the former to the latter place he had captured very few insects.

Mr. Waterhouse exhibited a specimen of Ischnoglossa corticina, a species hitherto

unrecorded as British, which he had detected in the collection of the late Mr. Heysham, of Carlisle.

Mr. Waterhouse also communicated some notes on the British species of the genus Gyrophæna, including two species not yet indicated as indigenous, *viz.* G. lævipennis, *Kraatz*, and G. maura, *Erich.*: he stated that both these species appear to be not uncommon in this country, and Mr. Janson observed that he also had recently recognised them in his own indigenous collection.

Dr. Wallace read a letter from Captain W. T. Russell, of Monk's Sleigh, Bildeston, Suffolk, in which the writer stated, with reference to the specimens of Papilio Podalirius in a collection in Suffolk, said to have been captured at Sevenoaks, as mentioned by Dr. Wallace at the October meeting of this Society, that the said specimens were certainly taken at Sevenoaks by him (Captain Russell), but in the immediate vicinity of the residence of a lady who had a day or two previously set at liberty a number of specimens of this butterfly, which she had bred from pupæ imported from the Continent; there could of course be no doubt that those captured by him were part of the imported brood. Captain Russell also detailed with much minuteness the circumstances attending the capture of several specimens of Callimorpha Hera and one of Eulepia grammica on a precipitous bank near Wrexham, North Wales, on the 27th of July, 1859: one of the examples of C. Hera is now contained in the indigenous collection at the British Museum.

Mr. F. Walker communicated descriptions of Exotic Lepidoptera contained in the collections of W. W. Saunders and A. Fry, Esqrs.

The Secretary called attention to a specimen copy of the first part of Mr. Trimen's new work on the Rhopalocera of Southern Africa, which was on the table, to which he should be happy to receive the names of subscribers.

The Secretary also read some descriptions of South-African Lepidoptera by Mr. R. Trimen, including species pertaining to the families Satyridæ, Lycænidæ and Hesperidæ.

The President announced that the Council had, in compliance with the almost unanimous wish of the Members of the Society, resolved to alter the hour of meeting from eight to seven o'clock; and that in future the chair of the monthly meetings would be taken at the latter hour.

January 6, 1862.

J. W. Douglas, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou,' Tome xiii. Liv. II.: 'Bulletin de la Société Impériale des Naturalistes de Moscou,' 1860, Nos. 2, 3 and 4; presented by the Society. 'Exotic Butterflies,' Part 41; by W. W. Saunders, Esq. 'Sitzungsberichte der Konigl bayer. Akademie der Wissenschaften zu München,' 1861, I. Heft IV.; by the Academy. 'The Zoologist' for January, 1862; by the Editor. 'The Journal of the Society of Arts' for December; by the Editor. 'The Athenæum' for November and December; by the Editor. 'Bibliotheca Historico-Naturalis Physico-Chemica et Mathematica,' Vol. ix.; by the

Editor, Ernst A. Zuchold. 'The Entomologist's Annual' for 1862; by the Editor, H. T. Stainton, Esq.

Election of a Subscriber.

W. S. M. D'Urban, Esq., of Newport House, near Exeter, was balloted for, and elected a Subscriber to the Society.

Exhibitions.

Mr. Smith exhibited a mutilated specimen of Myrmedonia Haworthi, captured by Mr. Bouchard, near Sutton, Surrey; and a singular nest of a bee of the genus Anthidium, brought from the Cape of Good Hope by Mr. D'Urban; this nest was formed of the fibres from the stems of plants, and might be mistaken for a spider's nest, from its external appearance; in the interior Mr. S. found the parasite of the bee, a species of Leucospis, believed to be L. ornata.

Mr. Smith also exhibited spines of a species of Acacia, also brought from the Cape of Good Hope by Mr. D'Urban; the interior of these formidable spines, being hollow, is frequently found occupied by the nest of a bee of the genus Hylæus. Mr. Smith believed this genus of bees constructs no cells of any kind; the pupæ is merely enclosed in a very slight web; and on opening these spines, the eggs, larvæ, and perfect bees were found mixed indiscriminately together.

Mr. Waterhouse stated that he had recently detected, in the collection of Dr. Power, specimens of Gyrophæna pulchella, a species not hitherto recorded as a native of Britain.

Mr. Bond exhibited a sample of compressed peat, cut in thin slices, which had lately been introduced in Germany as a substitute for cork for lining entomological boxes and drawers; the total absence of holes and hard veins, which are occasionally found even in the best cork, make it well adapted for the above purpose, especially when fine pins are employed, whilst the cost is said to be less than that of cork.

Dr. Knaggs exhibited some cases of species of Psychidæ, containing living pupæ, which he had lately received from Mr. James Carrighan, of Arrarat, Victoria.

Professor Westwood observed that the Australian species of Psychidæ had, at the request of W. W. Saunders, Esq., been observed with great care by Mr. Stephenson, and the specimens collected by that gentleman having been placed in his (Professor Westwood's) hands, he had illustrated them in a memoir published in the 'Proceedings of the Zoological Society:' the largest of these species had been described by Mr. Saunders himself in the 'Transactions of the Entomological Society,' Vol. v. (1847) p. 43, under the name of Oiketicus elongatus, which he, (Professor W.) had changed to Oiketicus Saundersii, in order to keep up uniformity in the specific nomenclature of the genus. It forms a tough leathery case, several inches long, to the outside of which long twigs are attached longitudinally. One case, exhibited by Dr. Knaggs, had not been described by Professor Westwood, although known to him, in consequence of the moth not having been reared: the case of this species is a leathery oval one, with sharp longitudinal ribs of the same material, without any extraneous materials fastened on the outside.

Mr. Dunning exhibited an admirably-executed photograph of a dark variety of Abraxas grossulariata, and read an extract from the 'Proceedings of the Northern Entomological Society' of December last, which referred to the production of it; Mr.

Dunning thought that photography might be found useful in obtaining accurate delineations of many Entomological objects.

Professor Westwood observed that a work had been published at Paris, several years since, by the authorities of the Jardin des Plantes, in which photography had been tried in different branches of Zoology, but the representations of insects had proved failures, owing to the want of accurate definition in the extended limbs, antennæ, &c., which seemed to render the act useless to Entomology, except in flat surfaces, such as the wings of Neuropterø, &c., of which the veins were capable of being very clearly represented.

On the Breeding of Varieties in Lepidoptera.

Mr. Dunning also read, from the 'Proceedings of the Northern Entomological Society,' a paper by Mr. C. S. Gregson, "On the Breeding of Varieties in Lepidoptera," in which the author detailed the result of his experiments on various species, with the view of showing that by supplying the larva with a food-plant differing from the known natural food of the species, variation from the usual coloration would be obtained in the imago.

Dr. Wallace had often noticed that on chalky soils oak-leaves were of a very pale green tint; on limestone soils, as in Wales, foliage generally had a dark leaden hue. On mosses dark tints were prevalent, as also at Killarney and Rannoch. He attributed this to the chemical difference in the soils, aided by solar and atmospheric influence. Brighton insects were notoriously pale, and inclined to fade on the setting-board; Scottish insects remarkable for their richness of colour; Welsh insects for their leaden hues. Since the juice of different plants possessed different chemical elements, he attributed to this, as also to the power possessed by the larva of assimilating these different elements, much of the variation in depth of colour in the instances cited by Mr. Gregson: he therefore referred the tone of colour in an insect's wing to the chemical elements assimilated through the medium of the plant from the soil.

Professor Westwood trusted that, if Mr. Gregson's article should only be privately circulated, the Entomological Society would obtain permission to publish it in their 'Transactions.' He considered Mr. Gregson's remarks as important, with reference to the question of modification of species dependent on the food of the larva, which he had so often insisted upon, with reference to many so-called species of Micro-Lepidoptera. The question as to the proper term to be applied to variations in the colour of flowers was at the present moment under discussion, all variation from the normal colour being considered by some writers as monsters, and in that view Professor Westwood fully conceded, considering that every species possessed a normal condition, which it had retained ever since the period of its creation, and that every modification of size, colour or markings was monstrous.

Mr. Lubbock would like to see the experiments of Mr. Gregson continued for many successive generations of the insects; he felt convinced that important and interesting results would be arrived at by so doing, and hoped that Mr. Gregson would persevere in his experiments.

Bees and the Art of Queen Making.

Mr. Smith read the following communication:—"At the November Meeting of this Society, Mr. Tegetmeier called the attention of the members to a theory lately

propounded by Principal Leitch, in an article published in the August number of 'Good Words,' entitled "Bees and the Art of Queen Making." I beg to lay before the Society the opinion of a correspondent, Mr. Woodbury, of Mount Radford, Exeter. This gentleman, one of the most practical bee-keepers in this country, has published some observations on the new theory, and has also added to them in a communication addressed to myself, in answer to some inquiries of my own. I have extracted the following from Mr. Woodbury's communication to the 'Journal of Horticulture and Cottage Gardener:'—'After noticing the power which bees possess of increasing the temperature of any part of their hive by an accelerated respiration, Dr. Leitch says: 'Viewing this power in connexion with the isolation of the queen's cell, we have a clew to the mystery of development. We soon see why the bees should be at so much pains to drag the royal larva out from the midst of its companions and place it in an insulated position, where a special temperature may be applied. Were the royal larva allowed to remain in its original position, a higher temperature could be applied only to the end of the cell, and the end of the cell is so small that it would be difficult to apply a differential temperature to it. To meet this difficulty, the queen is made to slide out of her old position into a new one, where she can be completely surrounded by the hatching bees, and have an elevated temperature applied to all parts; and when you look into a hive, you see the bees constantly clustering all over the insulated cell.

"'The surmise that temperature furnished the clew to the secret was confirmed by actually testing it; small thermometers were inserted into the hive, one in contact with the queen's cell, the others in different parts of the comb: we found that the difference of temperature bore out our hypothesis, that a higher temperature was steadily applied to the queen's cell. The inference is then legitimate, that temperature, if not the cause, is one of the causes which account for this, the greatest marvel of insect life.'"

"As the Rev. Principal does not particularize any experiments beyond thermometrical observations, we may be excused for doubting whether these are quite so conclusive as he imagines, as well as for suggesting that it is just possible that he may have mistaken effect for cause, since it by no means follows that because the process of queen-raising is generally attended with an increase of temperature, the insulation of a queen's cell, or even a special temperature, is absolutely essential to its success. In frame-hives, especially, we have often found queens hatched out of cells which were so placed as to render it impossible for the bees to cluster all over them, whilst the general position of queens'-cells on the edges of combs, and, therefore, in the coldest parts of the hives, is such as of itself to raise a doubt as to the correctness of the new theory.

"Our own impression is, that the immortal Huber was most probably correct in assigning as the cause of this wonderful transformation the quality as well as the quantity of food with which the royal larva is supplied. To this hypothesis Dr. Leitch objects that it has by no means been conclusively proved, either by chemical analysis or by any other means, that the so-called royal jelly differs in any respect from the ordinary food supplied to the worker-larva.

"We now come to a circumstance which appears to us so conclusive, as to the fact of the food with which it is supplied being the true cause of this marvellous transformation of a worker-larva into a queen-bee, that we fancy, if it had come under

the notice of the Reverend Principal, it would have prevented his promulgating a theory which we believe to be entirely erroneous.

"In the German 'Bienenzeitung,' or Bee Journal, is an article by the Rev. M. Kleine, one of the ablest German Apiarians, in which the following statement occurs: 'Dzierzon recently intimated, that as Huber, by introducing some royal jelly into cells containing worker-brood, obtained queens, it may be possible to induce bees to construct royal cells, where the Apiarian prefers to have them, by inserting a small portion of royal jelly in cells containing worker-larvæ. If left to themselves, the bees often so crowd their royal cells together that it is difficult to remove one without fatally injuring the others; as, when such a cell is cut into, the destruction and removal of the larva usually follows. To prevent such losses I usually proceed as follows:—When I have selected a comb with unsealed brood for rearing queens, I shake or brush off the bees and trim off, if necessary, the empty cells at the margin. Then take an unsealed royal cell—which usually contains an excess of royal jelly—and remove from it a portion of the jelly, on the point of a knife or pen, and by placing it on the inner margin of any worker-cells, feel confident that the larvæ in them will be reared as queens; and, as the royal cells are separate, and on the margin of the comb, they can be easily and safely removed. This is another and important advance in practical bee-culture, for which we are indebted to the sagacity of Dzierzon.'

"The foregoing fact appears to us sufficiently conclusive as to the truth of Huber's theory, regarding the influence of food in producing the astonishing development of a worker-larva into a queen-bee, and, after giving the whole subject our best consideration, we feel warranted in pronouncing the special-temperature theory of the Rev. Mr. Leitch to be 'not proven.'

"I am very glad to find that our ideas on the queen-rearing problem are so similar. With regard to the cells of queens, they are formed of wax like all the others, and although, from being more substantial, they might not collapse so readily, their destruction would be only slightly delayed, the melting point being the same. The only difference is in the cocoon with which they are lined, which is spun by the royal larva, and is more substantial than that of the ordinary worker-larva. This cocoon, however, does not line the upper end of the cell, as that would melt and the lower part must then drop off if an extreme temperature were applied. It has been too much the fashion of late years to decry and discredit the theories of Huber; some throw doubt on the influence or even the existence of royal jelly, but in this case, as in similar ones, I believe that accurate investigation will prove Huber to be right."

Professor Westwood remarked that the question of the development of the queen-bee, by increased heat, did not appear to him at all proved by Principal Leitch's observations. The position of the cell itself, generally on the outer edge of the comb, and never, or but very rarely, in the centre of the upper part of the hive, where the greatest heat is concentrated, seemed to militate against this new theory; whilst Professor Westwood considered that (as it was satisfactorily established that the working bee was only an abortive queen, and that a queen might be developed from an egg which in ordinary circumstances would only produce a worker), he was justified by analogy, in regarding the numerous queen wasps in a vespiary as produced from the same kind of eggs as the workers, and also that the working ant, the soldier working ant and the female ants are also only modifications produced from the same kind of eggs. He

considered, therefore, that the development of the queen-bee must be explained on the same principle as that which is adopted in those other social insects, and not that a special system, namely, that of heat, is required for the queen of the hive alone.

Mr. Tegetmeier observed that, in bringing the theory of Principal Leitch under the notice of the Society, he did not wish it to be understood that he considered the evidence advanced in its favour to be conclusive, still he could not but think that the isolated position of the queen-cell very much favoured the supposition that increased heat is at least one of the causes of the perfect development of the female bee; whilst the royal jelly theory does not offer the slightest explanation of this extraordinary deviation in structure and position from the ordinary or worker cells.

Mr. Stainton read, "Descriptions of Nine New Exotic Species of Gracillaria," and exhibited a beautiful coloured plate with which he proposed to illustrate the paper in the Society's 'Transactions:' five of these species were collected near Calcutta by Mr. Atkinson, and the remaining four were sent from Moreton Bay by Mr. Diggles.

Mr. M'Lachlan read "Characters of New Species of Exotic Trichoptera, and of four New Species Inhabiting Britain."

Anniversary Meeting, January 28, 1862.

J. W. Douglas, Esq., President, in the chair.

Messrs. R. H. Mitford, F. P. Pascoe, F. Smith and Alexander Wallace were elected Members of the Council, in the room of Messrs. Douglas, Janson, M'Lachlan and Stainton.

Mr. F. Smith was elected President; Mr. S. Stevens, Treasurer; and Messrs. E. Shepherd and Dunning, Secretaries.

A Report from the Council on the state of the Library and Collections was read and received.

An abstract of the Treasurer's accounts was read by Mr. M'Lachlan, one of the Auditors, and showed a balance in favour of the Society of £122 6*s.* 4*d.*

The President delivered an Address on the state and prospects of the Society and of Entomology in general; the Meeting passed a vote of thanks to the President for his Address, and ordered it to be published in the 'Proceedings' of the Society.

A vote of thanks to the President for the courteous and able manner in which he had fulfilled the duties of his position during the two years that he had occupied the Presidential Chair; to Mr. Janson, the retiring Secretary; and to the other retiring Members of the Council, was also unanimously agreed to by the Meeting.

THE PRESIDENT'S ADDRESS.

GENTLEMEN,

As custom requires that at the Anniversary Meeting the President should deliver an Address on the state and prospects of this Society, and Entomology generally, I have prepared a few observations on these subjects, to which I have now to request your attention.

Finance.

Our balance-sheet for the year 1861 shows the receipts (including the balance in hand for 1860) to have been £378 12*s.* 4*d.*, and the payments to have been £156 6*s.*, leaving a balance in favour of the Society of £122 6*s.* 4*d.* But part of the receipts (£47 5*s.*) is derived from three composition fees, part (£37 15*s.*) from donations by two of our members towards the cost of altering and lighting the rooms, and part (£5) to a payment by Mr. Parrell; so that if it had not been for these extraordinary sources of income there would have been a large deficit; moreover, we have only been able to publish three instead of four parts of 'Transactions.' On the other hand the amount of "liabilities" is much less than usual, and the number of "new members" exhibits a slight increase. But the gift of the 'Transactions' to the metropolitan members entails a loss of from £10 to £15 a year upon the Society, which has not been compensated by the election of new members in proportion, as it was hoped might be the case when the new plan of giving our 'Transactions' to the metropolitan members was adopted.

Last year I had to draw your attention to the deficiency of the "Tea Subscription," but as the amount subscribed during the year (£12 5*s.*) approximates to the cost (£13 13*s*), I have now no observation to offer on the subject.

Election of Members.

During the past year we have elected four Members, *viz.*, Signor A. De Lacerda, James Rome, Esq., A. Murray, Esq., G. S. Saunders, Esq., and ten Subscribers, *viz.*, W. S. M. D'Urban, Esq., C. Fenn,

Esq., J. Fenn, Esq., J. G. Grenfill, Esq., R. Hackshaw, Esq., A. Haward, Esq., J. Holdsworth, Esq., J. A. Laing, Esq., F. O. Ruspini, Esq., and A. Solomon, Esq. We have lost by resignation two Members, A. Boot, Esq. and O. P. Cambridge, Esq., and three Subscribers, A. E. Crafter, Esq., R. W. Meade, Esq., and G. M. Salt, Esq., and one Subscriber by death, J. C. Young, Esq.

Obituary.

Mr. J. C. Young, the Subscriber above referred to, was only elected in 1860. He was, I believe, a young Coleopterist, but his name is not found in the List of Entomologists published in the 'Annual' in 1859; as far as I am aware he had not published anything, and was personally unknown to me, and I am unable to say more respecting him than that he died during the last year.

One entomologist, not a Member of this Society, M. Bruand d'Uzelle, of Besançon, in France, died on the 3rd of August, 1861. His chief work was the 'Monographie des Psychides;' Besançon, 1853. His friend, M. Millière, has been requested to furnish the Entomological Society of France with a memoir of his life and works.

Library and Collections.

During the past year the Library has been enriched by donations of valuable books, which have been duly announced at the Monthly Meetings; and now that the publication of the Catalogue of the Library informs us exactly of what works we possess, I trust that some of the standard works still wanting may be supplied by the donation—by such of the members as possess duplicate copies—of any of them. And as there are some works, chiefly modern, which probably can only be obtained by purchase of the booksellers, and we have a fund specially set apart for this purpose, the Council will be happy to learn from time to time what are the works the Members consider it desirable the Society should procure.

The Council have had under their careful consideration the unsatisfactory state of the Collections, but the very recent date when this matter was brought under their notice has rendered it necessary to postpone, for the decision of the new Council, the action requisite to put the Collections into a proper condition.

The Society's Apartments.

At the last Anniversary Meeting I announced that the Council had determined to remove the Society's place of meeting to other and

larger rooms, but the negotiations to this effect failed, and all that could be done was to enlarge and improve the old meeting-room. At a considerable expense we have acquired more space, better ventilation and gas-light, and it now remains for entomologists to show their appreciation of the endeavours made on their behalf by supporting the Society which has made them.

The Entomological Season of 1861.

On all hands it is stated that during the last year, although some new or rare insects have been captured, there has been a scarcity of insects of all Orders in Britain ; and this is generally attributed to the cold and wet season of 1860. It seems quite certain that such was the cause in an instance mentioned in the 'Annual,' p. 75, by Mr. Smith. He says, "I visited a locality at Southend where a very extensive colony of Anthophora has existed for many years, and also one of Eucera longicornis: both these bees, in ordinary seasons, are found at that spot in great numbers, but on my last visit scarcely a single bee was to be seen on one of the finest days of early summer. Being disappointed in my search, I proceeded to dig into the bank in which the colony was situated ; an explanation of the cause of the scarcity of the bees soon presented itself; hundreds of dead bees filled the burrows, whilst numberless cells were half filled with the mouldy remains of honey and pollen stored up for the larvæ, which had doubtless perished during the former ungenial season. A similar fate has, I fear, befallen three-fourths of the solitary bees; and it will, I fear, be some years before we shall again see these attendants upon spring and early summer, in their usual numbers, flying from flower to flower, and adding life and beauty to the sunny days of spring." We have no similar observations respecting other Orders; indeed, in most cases, from the different economy of the insects, it was not possible to remark the direct influence of the weather upon them; yet it is fair, I think, to conclude that the general scarcity of insects in 1861 was due in a great degree to the cold and wet of 1860. And, this being granted, it is not difficult to see how an exceptional season may not only render some species of insects rare for a time, but may altogether extinguish them in a locality or country, and that thus species may become extinct by a cause which overwhelms all the individuals in one common ruin, and leaves no one of them with a variation of constitution or modification of structure wherewith to begin a new species on the principle of "selection" with which we are so familiar.

British Museum Collections.

Dr. Gray has had the kindness to send me the following note of the increase of the Museum Collection :—

"The Museum has added 11,000 specimens of insects during the last year."

The mention of the British Museum naturally recalls to mind the recent resolution of the Trustees to remove the Natural-History Collections to some other locality. If the removal be made to some central place, then naturalists may rejoice in the hope of seeing the vast acquisitions continually made by the Museum, and now useless for want of space, rendered available for use by scientific men. But if, notwithstanding the protest against the separation from the other collections of the Museum, signed by nearly every naturalist of note, which was sent to the Trustees, they consent to the removal of the Natural-History Collections to a distant part of the metropolis, it is quite certain they will have done more than by any other means could be accomplished to retard the progress of the science of Natural History in England. At present it is difficult enough for entomologists occasionally to steal an hour or two from their other avocations to study the collections in the Museum, but if the insects be removed to one extremity of the town, they will become, by their inaccessibility, useless to the very class of persons that most of all could profit by them.

The Oxford University Museum.

The foundation, by the Rev. F. W. Hope, of the Chair of Zoology at Oxford, with especial reference to the Articulata, and the appointment of Mr. Westwood as Professor, are events on which entomologists generally may be congratulated, as they can scarcely fail to have a most beneficial effect on scientific Entomology. But in order to realize the full benefits of which such an institution is capable, I trust that the Professor will have so much assistance allowed him, in attending to the Museum, as to leave him free to devote the necessary time to lectures and the other higher duties of his office.

Professor Westwood has had the goodness to send me the following particulars respecting the Museum :—

"During the past summer the Hope Collections of Articulata have been removed from the Taylor Institute to the head University Museum, where a noble room has been fitted for their reception. Fresh cabinets, made by Standish, have been received, it being intended by degrees to place the collection in uniform cases. Besides

the cabinets five large glazed table-cases have been fitted-up for the display of some of the larger and more showy species, illustrations of transformations and economy, fossil insects, &c., and two large glazed cases for objects in spirits and the larger illustrations of economy. Some considerable additions have been made, especially from the private collection of Mr. Bates, by which a great number of very rare and unique Hymenoptera, Neuroptera, Homoptera, &c. have been acquired. Other selections, from the different collections forwarded by Wallace and others, have been obtained through Mr. Stevens, and numerous donations to the collection have been received from Mr. S. Stone, Mr. F. Bond, Miss Ormerod, the Marquis of Salisbury, Rev. Pickard-Cambridge, &c. Moreover, the fine Collection of Crustacea formed by Professor Bell has been presented to the University, as well as the Collection of Crustacea formed by Mr. Charles Darwin, Sir J. Belcher, and Mr. Stokes."

Entomological Meetings.

As usual, our worthy friend Mr. Saunders invited all the Members of this Society to meet him at Reigate, and on the 21st of June between sixty and seventy persons availed themselves of his guidance on an excursion, and in the evening experienced the hospitality he knows so well how to dispense. This was not the first time Mr. Saunders has invited us; and I believe that such gatherings, though they may not be of much scientific value, are of great service in bringing entomologists together, and giving them opportunities of knowing and appreciating each other that our more formal and restricted meetings do not afford. It is in the conviction of this, and that thereby the interests of Entomology are advanced among us, that Mr. Saunders finds his reward, and I hope we duly appreciate the spontaneous kindness and endeavour to do good which are so characteristic of the man.

Besides our ordinary meetings here, which I am happy to say are well attended, showing their interest does not decrease, London entomologists have also other advantages. The Entomological Club continues to hold its meetings at the houses of the Members in rotation: to them no entomologists need want an invitation, and I am sure no one regards his attendance thereat with any but pleasurable recollections. During the winter months the excellent collection of the Club is open every Thursday evening at the house of the Curator, Mr. Newman, and every entomologist is there welcomed. On the first Wednesday in every month Mr. Stainton is "at home"

to any entomologist, when his rich library and collection are at the service of visitors.

British Entomological Works recently published.

The Trustees of the British Museum have published the following during 1861 :—

'A Catalogue of Lycænidæ,' by W. C. Hewitson, with plates.

'Catalogue of Lepidoptera-Heterocera," by Francis Walker, F.L.S.

'Catalogue of British Coleoptera,' by G. R. Waterhouse, F.Z.S., &c., 1861.

'The Pocket Catalogue of British Coleoptera,' by the same author.

The former of these works realizes the hopes of our English collectors in supplying a want that has long been felt of a list of our native beetles, the nomenclature of which should be in accordance with that in use on the Continent, at the same time including that hitherto used in this country. Only an intense love of and long-continued application to his work could have carried the author through his labours; pecuniary recompense is out of the question, but I hope there is sufficient appreciation of the boon bestowed upon Coleopterists not to suffer the author to be an absolute loser by the publication of this Catalogue. The 'Pocket Catalogue' is intended for a register of species in collections and for interchange among collectors.

'The Natural History of the Tineina,' Vol. vi., containing Depressaria, Part I., with eight coloured plates of twenty-four species and their transformations, by H. T. Stainton, assisted by Professor Zeller and J. W. Douglas, 1861.

'The Entomologist's Annual' for 1862, with a coloured plate :—

Fossil Entomology.—"A Comparison of the Fossil Insects of England and Bavaria," by Dr. Hagen.

Coleoptera.—"Index to the New British Coleoptera enumerated in the 'Entomologist's Annual,' 1856—1861," by W. F. Kirby.

Trichoptera.—"Notes on British Trichoptera, with Descriptions of New Species, &c.," by R. McLachlan.

Lepidoptera.—"Notes on Eupithecia-Larvæ," by the Rev. Henry Harpur Crewe, M.A. "A Chapter on Zygæna Minos," by the Editor. "New British Species in 1861," by the Editor. "Rare British Species captured in 1861." "Observations on British and Continental

Tineina." "Answers to Enigmas." "Enigmas still unanswered." "New Enigmas for solution." "Natural History of the Tineina."

Hymenoptera.—"Notes on Hymenoptera observed during the past Season: some Observations on Hymenopterous Parasites, and a Monograph of the Family Chrysididæ," by F. Smith.

Hemiptera.—"On Hemiptera, commonly called Bugs," by J. Scott.

"New works on Entomology."

The usual enumeration of new British species of Coleoptera noticed during the year is wanting, "for reasons to which it is unnecessary to refer." However satisfactory this may be to the editor, his readers will doubtless think that some one might have been found to furnish the requisite information, and I hope the gap will be filled up in the next volume.

The 'Transactions of the Entomological Society of London,' Vol. v., Parts 8—10, with five plates, completing the volume :—

"Characters of Undescribed Diptera in the Collection of W. W. Saunders, Esq., F.R.S., &c.," by Francis Walker, Esq., F.L.S., &c. (concluded).

"Contributions to an Insect Fauna of the Amazon Valley," by H. W. Bates, Esq. (concluded).

"On the Atlantic Cossonides," by T. Vernon Wollaston, Esq. M.A., F.L.S., &c.

"Descriptions of Five New Species of Coleophora," by John Scott, Esq.

"On Elaphomyia, a Genus of remarkable Insects of the Order Diptera," by W. W. Saunders, Esq., F R.S., &c.

"Notice of the occurrence of a Strepsipterous Insect parasitic in Ants, discovered in Ceylon by Herr Nietner," by J. O. Westwood, Esq., M.A., F.L.S., &c.

"Catalogue of the Library of the Entomological Society."

Our Proceedings for 1861 record the exhibition at our Meetings, during the year, of the following new or rare British insects:—

Coleoptera.

Abdera 4-fasciata, *Curt.*
Anobium denticolle, *Panz.*
Bryaxis Helferi, *Schmidt.*
„ pulchella, *Schaum.*
„ Lefebvrii, *Aubé.*
Ceutorhyncus inornatus, *Waterhouse.*
Clambus armadillus, *De Geer.*
Clambus minutus, *Sturm.*
„ pubescens, *Redtenbacher.*
Euryporus picipes, *Payk.*
Gyrophæna lævipennis, *Kraatz.*
„ maura, *Erich.*
Micropeplus Staphylinoides, *Marsh.*
„ Margaritæ, *Duval.*
Myrmedonia Haworthi, *Steph.*

Philonthus punctiventris, *Kraatz.*
Saperda oculata, *Lin.*
Scraptia fusca, *Latr.*
Scymnus discoideus, *Illig.*
„ Mulsanti, *Waterhouse.*
„ limbatus (*Kirby*), *Stephens.*

Hemiptera.

Acetropis carinatus, *H.-Schäffer.*
„ seticulosus, *Fieber.*
Anthocoris Austriacus, *Hahn.*
Microphysa Pselaphoides, *Burm.*
Micropus sabuleti, *Fallen.*
Myrmedobia coleoptrata, *Fall.*
Piezostethus bicolor, *Scholtz.*

Hymenoptera.

Braula cœca.

Lepidoptera.

Cidaria reticulata, *Fab.*
Coleophora Wilkinsoni, *Scott.*
Dianthœcia capsophila, *Ander.*
Eupithecia tripunctata, *H.-Schäffer.*
„ trisignata, *H.-Schäffer.*
Gelechia Tarquiniella, *Staint.*
Gonepteryx Rhamni, *var* Cleopatra.
Lithosia caniola, *Hüb.*
Nonagria Bondii, *Knaggs.*
„ Elymi, *Treitschke.*
Xylina conformis, *Treitschke.*

Trichoptera.

Agrypnia picta, *Kolenati.*
Goniotaulius concentricus, *Kolenati.*
Leptocerus fulvus, *Rambur.*
Limnophilus incisus, *Curtis.*
Setodes interruptus, *Fabricius.*

The 'Transactions of the Linnean Society of London,' Vol. 23, Part 1, 1861 :—

"On the Distribution of the Tracheæ in Insects," by John Lubbock, Esq., F.R.S., L.S., &c.

"Observations on the Neuration of the Hind-wings of Hymenopterous Insects, and on the Hooks which join the Fore and Hind Wings together in flight," by Miss Stavely.

"On Certain Sensory Organs in Insects, hitherto undescribed," by J. Braxton Hicks, M.D. Lond., F.L.S.

'Journal of the Proceedings of the Linnean Society of London,' Vol. 5, 1861 :—

"Account of the Habits of a Species of Australian Ant," by Mrs. Lewis Hutton.

"Descriptions of New Species of Hymenopterous Insects collected by Mr. A. R. Wallace at Celebes, Batchian, Kaisaa, Amboyna, Gilolo, and Dory, in New Guinea," by F. Smith, Esq.

"Catalogue of the Dipterous Insects collected in Amboyna, Dory, Manado, Tond, Batchian, Kaisaa, Makian, and Iidon, by Mr. A. R. Wallace; with Descriptions of the New Species," by F. Walker, Esq.

'The Zoologist' for 1861 contains many interesting entomological communications, of which the following are the most important :—

Coleoptera.

"Descriptions of three New British Coleoptera, *viz.*, Philonthus prolixus, *Erichs.*, Oligota apicata, *Erichs.*, Bledius crassicollis, *Erichs*," by Dr. Power.

"Beetling at the Cape and in Java," by Arthur Adams, Esq., F.L.S.

"Occurrence of Ammœcius brevis at Southport," by A. Haward, Esq.

"Haunts of Leptinus testaceus in Scotland," by R. Hislop, Esq.

"Capture of Stenolophus derelictus," by A. & H. Solomon, Esqs.

"Descriptions of Ptilium insigne, *Matth.*, Ptilium inquilinum (Märkel), *Erichs.*, and Ptinella gracilis, *Gillm.*," by the Rev. A. Matthews.

"Capture of Sphærius acaroides, &c., in the Fens," by G. R. Crotch, Esq.

Diptera.

"Economy of Cecidomyia Taxi, *Inchbald*," by P. Inchbald, Esq.

Hymenoptera.

"A Contribution to the Natural History of Ants, *not* read at the Linnean Society: A few Observations on Cynips Lignicola and C. radicis—confirming the observations of Leon Dufour and Hartig, that in the genus Cynips there are only females," by F. Smith, Esq.

"Description of Cynips Rosæ-spinosissimæ, *Inchbald*," by Peter Inchbald, Esq.

"Means employed in the Capture of a Nest of Hornets;" "Close of the Labours of a Colony of Hornets," by S. Stone Esq.

"Life-Histories of Sawflies, from the Dutch of Vollenhoven," by J. W. May, Esq.

Lepidoptera.

"Descriptions of the Larvæ of various Lepidoptera;" "Description of a new Geometer—Ephyra? decoraria, *Newm.*;" Occurrence of Zygæna Achilleæ in Ireland;" "Further Notes on the supposed new Irish Zygæna, Z. nubigena, *Museorum*;" by E. Newman, Esq.

"Note on the Irish Zygæna. Lithosia caniola, *Hüb.*, in Devonshire and in Ireland;" "Notes on new or little-known British Eupitheciæ (with Descriptions of the Larvæ, by the Rev. H. Crewe)," by H. Doubleday, Esq.

"Occurrence of Notodonta bicolor in Staffordshire," by J. Hardy, Esq.

"Occurrence of Lythria purpuraria in Britain," by V. R. Perkins, Esq.

"A List of Lepidoptera hitherto formed within the Province of Moray, &c.," by the Rev. George Gordon, M.A.

"Occurrence of Acentropus niveus at Hampstead," by R. McLachlan, Esq.

Trichoptera.

"Notes on the Family Phryganidæ," by E. Parfitt, Esq.

'The Zoologist' now consists of 19 volumes, containing 7824 pages, and the greatest service the editor could render to his subscribers and naturalists in general would be to publish a classified index to the vast amount of interesting matter which is here accumulated. I believe the present race of naturalists are for the most part quite unaware what a store of valuable matter is contained in this work, and for those who do know the labour and time required to find the record of observations on any given item are immense.

'The Entomologist's Weekly Intelligencer,' Vols. ix. and x. This periodical has ceased to appear; the reason given by the editor for discontinuing it being that there are too many periodicals, and that this was one of the number. I ventured in my Address last year to suggest that the 'Intelligencer' might be improved, and I still think (notwithstanding the editor's denunciation of periodicals in general, which in the main is quite true), that a periodical which should not only give notices of new or rare insects discovered in Britain, but also notes and abstracts of papers published in England and on the Continent, is a desideratum. Such a work I believe would more than any other serve to raise up a body of young men who would be worthy of the name of entomologists; but as in England no such work is undertaken by an individual unless it will pay, and there is but little chance that, for a considerable period at least, such a work would pay its expenses, there is no prospect that any person would devote the time and capital necessary to begin and continue it. It might possibly be managed by the united labours of several entomologists under a competent editor, but it would be absolutely necessary for them to agree to *continue* to furnish matter, and firmly to resolve to shut out all personalities.

'Annals and Magazine of Natural History,' 1861:—

"On the Anobiidæ of the Canary Islands," by T. V. Wollaston, Esq., M.A., F.L.S.

"Description of a New Species of Spider lately discovered in England," by R. H. Meade, F.R.C.S. (The animal is Epeira bella).

"On certain Coleoptera from the Island of St. Vincent;" "On certain Coleoptera from the Island of Ascension;" by T. V. Wollaston, Esq., M.A., F.L.S. (Eleven species, seven certainly, four probably, imported).

"Supplement to a Monograph on the British Species of Phalangiidæ, or Harvest Louse," by R. H. Meade, F.R.C.S.

"Further Observations on the Natural History of the Lac insect (*Coccus lacca*)," by H. F. Carter, Esq., F.R.S.

"Descriptions of ten New Species of Spiders lately discovered in England," by the Rev. O. P.-Cambridge, B.A.

"On the possible Identity of Paussus lineatus, *Thunberg*, and P. Parrianus, *Westwood*, &c.," by W. H. Benson, Esq.

"Contributions to an Insect Fauna of the Amazon Valley: Coleoptera, Longicornes," by H. W. Bates, Esq.

"Notice of a New Species of Damaster from Japan," by Arthur Adams, F.L.S.

"On Additions to the Madeiran Coleoptera," by T. V. Wollaston, Esq., M.A., F.L.S.

"Description of a New Species of Branchipus (*B. eximiens*) from the Port of Gihon in Jerusalem," by W. Baird, M.D., F.L.S.

"Descriptions of two New Species of Coleoptera from the Canary Islands," by the Baron de Castello de Paiva.

"Contributions to British Carcinology," by the Rev. Alfred Merle Norman, M.A.

"Descriptions of several recently discovered Spiders," by John Blackwall, F.L.S.

'The Journal of Entomology,' Nos. 3 & 4, 1861.

No. 3 (with 3 plates):—

"On Certain Coleopterous Insects from the Cape of Good Hope," by T. V. Wollaston, Esq., M.A., F.L.S.

"Descriptions of New Genera and Species of Exotic Hymenoptera," by Frederick Smith.

"Descriptions of New Diurnal Lepidoptera," by W. C. Hewitson.

"On the Endomychidæ of the Amazon Valley," by H. W. Bates.

"Characters of Undescribed Species of the Family Chalcididæ," by F. Walker, F.L.S.

"Reflexions et Notes Synonymiques sur le Travail de M. James Thomson sur les Cerambycites, &c.," par A. Chevrolat.

"Descriptions of New Genera and Species of Phytophaga," by J. S. Baly.

No. 4 (with 3 plates) :—

"On Certain Coleoptera from St. Helena," by T. V. Wollaston, M.A., F.L.S.

"Descriptions and Figures of a New Species of Gallerucidæ," by J. O. Westwood, M.A., F.L.S.

"Contributions to an Insect Fauna of the Amazon Valley: Lepidoptera, Papilionidæ," by H. W. Bates.

"Reflexions et Notes Synonymiques sur le Travail de M. James Thomson, &c.," concluded, par A. Chevrolat.

"Observations suggérées par les Notes de A. Chevrolat, sur les Cerambycides de M. Thomson;" "Tentamenta Entomologica," par H. Jekel, M.E.S.

"Descriptions of New Genera and Species of Phytophaga," by J. S. Baly.

"Entomological Notes," by Francis P. Pascoe, F.L.S.

Foreign Entomological Works recently published.

'Die Rhyncoten Livlands in systematischen Folge beschrieben, Erster Theil: Rhynchota frontirostria, *Zett.* (Hemiptera heteroptera, *Aut.*)," von Dr. Gustav. Flor. Dorpat, 1860.

In this volume of 820 pages the Livonian Heteroptera are well described. The older and generally-accepted genera are retained, modern subdivisions being given as subgenera; the specific synonymy is very full, and appears to have been worked out with much care.

'Die europäischen Hemiptera (Rhynchota Heteroptera) nach der analytischen Methode bearbeitet,' von Dr. Franz Xaver Fieber, mit zwei lithographirten Tafelu, Wien. 1861.

The analytic system followed in this elaborate work appears to have rendered necessary the reduction of generic value to the lowest point, consequently an infinite number of new genera has been created, established for the most part on very small structural differences, so that a great portion of the genera contain only a single species each; the result being that a vast amount of descriptive matter has to be kept in mind in order to arrive at a certainty upon any given point, and, contrary no doubt to the intention of the author, the facility of determination is rendered very difficult. The synonymy of the species is full, but the method of printing it in

continuous lines without variation of type, although it has ensured economy of space, has greatly increased the labour of reference. Notwithstanding these drawbacks the work, as a condensation of all that had been written up to the date of publication, has done great service, and is indispensable to the student of European Hemiptera.

'Die Rhynchoten Livlands in systematischer Folge bescrieben; Zweiter Theil. Rhyn. gulærostria, *Zett.* (Hemip. homoptera, *Aut.*)' von Dr. Flor. Dorpat, 1861.

This volume, containing the Homoptera, *viz.*, Cicadina (Fulgorina, Membracina and Cicadellina) and Psyllodea, I have not yet seen. The Aphidina, Coccina and Pediculina, will form another volume.

'Catalog der Lepidopteren Europa's und der angrenzenden Ländern; Macrolepidoptera bearbeitet, von Dr. O. Staudinger; Microlepidoptera bearbeitet, von Dr. M. Wocke,' Dresden, 1861.

'Catalogue systématique de tous les Coléoptères décrits dans les Annales de la Société Entomologique de France depuis 1852 jusqu' à 1859,' par Alexandre Strauch, Halle, 1861.

'Histoire des Metamorphoses des quelques Coléoptères Exotiques,' par M. E. Candèze, Liege, 1861.

'Essai d'une Classification de la Famille des Cérambycides et Matériaux pour servir à une Monographie de cette Famille,' par M. James Thomson, Paris, 1860.

'Fauna Austriaca; Diptera,' Hefte 3—5, by Dr. Schiner, Vienna.

'Die Europäischen Formiciden, nach der analytischen Methode bearbeitet,' von Dr. Gustav. Mayer mit einer Lithographirten; Tafel, Wien, 1861.

'Neue Beiträge zur Kenntniss der Dipteren,' 8tes Heft, von H. Loew, Berlin.

'Dipterenfauna Südafrikas,' 1ster Band, von H. Loew, Berlin.

'Essai Monographique sur la Famille des Throscides, et Nouvelles Espèces.'

'Was da Kriecht und Fliegt! Bilden aus dem Insektenleben mit besonderer Berucksichtigung ihrer Verwandlungsgeschichte entworf en,' von Dr. E. L. Taschenberg, Berlin, 1860.

'Saggio di Ditterologia Messanica di Luigi Bellardi,' Parte 1, Torino, 1859.

'Revision der europäischen Otiorhynchus—Arten,' von Dr. G. Stierlin, Berlin, 1861.

This work appears as a "Beiheft" of the 'Berliner Entomologische Zeitschrift,' but it is entirely distinct from that journal.

'Neue Schmetterlinge aus Europa und den angrenzenden Ländern,' von Dr. Herrich-Schäffer, Part 2, with nine plates, 1860; Part 3, eight plates, 1861, Regensburg.

'Die Schmetterlinge Deutschlands und der Schweiz,' von H. v. Heinemann. Erste Abtheilung; Gross Schmetterlinge, Braunschweig, 1859.

'Annales de la Société Entomologique de France,' 3me serie, Tome viii. Trimestre 4e, 1861 :—

"Observations sur la Faune Entomologique de la Sicile," par M. Bellier de la Chavignerie; Lepidoptera, by the Author; Orthoptera, by M. L. Brisont de Barneville; Coleoptera, by M. L. Reiche; Hemiptera, by M. le Dr. Signoret; Hymenoptera, by Dr. Sichel; Diptera, by M. J. Bigot. "Essai Monographique sur les Galerucites Anisopodes (*Latr.*); ou Description des Altises d'Europe," par M. E. Allard. "Supplement à la Monographie des Histerides," par M. S. A. de Marseul. "Essai sur la Faune Entomologique de la Nouvelle Calédonie, &c.,' par le Rev. Père Montrouzier (Coléoptères). "Faune des Hémiptères de Madagascar" (conclusion), par M. le Dr. Signoret. "Observations sur un Genre Nouveau d'Arachnide Trachéenne (Sotolemon Lespesü)," par M. H. Lucas. "Rapport sur l'Excursion Provinciale faite a Besançon, &c. en Juin, 1860," par M. Emm. Martin.

4me Serie, Tome i. Trimestre 1er et 2me, 1861 :—

"Notices Entomologiques:" 1, Sur Epeira sericea et Pompilus croceicornis; 2, Sur Euchalcis Miegii et sur quelques autres Hyménoptères de ce même genre; 3, Sur une nouvelle espèce d'Astata; 4, Sur une nouvelle espèce de Bembex; 5, Sur une nouvelle espèce de Cephus; 6, Sur une nouvelle espèce de Phalangopus, par M. Léon Dufour. "Notice Nécrologique sur Meig," par M. Léon Dufour. "Observations sur divers points d'Entomologie:" 1, Notice sur le Botys du Cobea; 2, Notice sur la Teigne des toiles d'araignées tegenaire et Segestrie," par M. le Dr. Doumerc. "Description de trois Lépidoptères nouveaux de l'Ile de Corse," par M. Bellier de la Chavignerie. "Note sur une Lépidoptère hermaphrodite (Chelonia Latreillei)," par M. Bellier de la Chavignerie. "Note sur

quelques espèces du genre Pterophorus," par M. Bruand d'Uzelle. "Etudes sur le genre Lithosia," par M. Guenée. "Description de quelques Hémiptères nouveaux," par M. le Dr. Signoret. "Essai sur la Faune Entomologique de la Nouvelle-Calédonie, &c.," par le Rév. Père Montrouzier. "De l'emploi de l'Alcool saturé d'Acid Arsénieux pour la conservation des Collections Entomologiques," par M. C. E. Leprieur. "Courtes remarques sur les moyens de conserver les Collections Entomologiques," par M. le Dr. Sichel. "Sur quelques espèces de Coléoptères du Nord de l'Afrique," par M. Reiche. "Description de quatres nouvelle espèces de Coléoptères appartenant à un genre nouveau (Theca, Fam. Anobites)," par M. le Dr. Aubé. "Description de cinq nouvelle espèces de Coléoptères propres à la Faune Française," par M. le Baron Gautier des Cottes. "Note sur une nouvelle espèce de Lamellicorne Phyllophage (Pachydema Lethierryi)," par M. H. Lucas. "Description du Mallaspis Moreletii (Fam. Prionides)," par M. H. Lucas. "Revision des Coléoptères du Chili," par M. L. Fairmaire et P. Germain. "Revision du genre Agra," par M. le Chaudoir. "Description de nouvelle espèces des genres Tricondyla et Therates," par M. le Chaudoir. "Supplement à la Monographie des Histérides," par M. S. A. de Marseul. "Espèces nouvelle du genre Sternotomis," par M. le Dr. Coquerel. "Description d'un genre inedit de Dejean (Centrocerum, Fam. Cerambycides)," par M. A. Chevrolat. "Description d'une nouvelle espèce de Néuroptère," par M. le Dr. Doumerc. "Description de Coléoptères nouveaux propres à la Faune Française," par M. le Baron Gautier des Cottes. "Description de six espèces nouvelles de Coléoptères d'Europe — genres nouveaux et aveugles," par M. le Dr. Aubé. "Note sur les Antennes du Spilophora trimaculata," par M. le Dr. A. Chereau. "Notes Synonymiques (Coleoptera)," par M. L. Reiche. "Note sur le genre Eugaster (Fam. Locustides)," par M. H. Lucas. "Quelques remarques sur la manière de vivre du Mellinus sabulosus," par M. H. Lucas. "Note sur une nouvelle espèce du genre Ixodes," par M. H. Lucas. "Trois Diptères nouveaux de la Corse," par M. J. Bigot. "Note sur les Pœderus à abdomen concolore," par M. Fauvel. "Metamorphoses d'une Mouche parasite (Tachina—Masicera villica)," par M. le Dr. Al. Laboulbène. "Description et figure d'une Larve d'Œstride de Cayenne;" "Sécrétions de matière musquée chez les Insectes," par M. le Professor Girard. "Des Cocons de la Puce," par M. Léon Dufour. "Notice Nécrologique sur Charles Delarouzée," par. M. Gabriel de Baran.

Trimestre 3me, 1862.

"Coléoptères de la Nouvelle—Caledonie (fin.)," par Montrouzier. Catatogue complémentaire des Altises d'Europe et du Nord de l'Afrique et Table generale," par Allard. "Espèces nouvelles de Throscides," par Bonvouloir. "Coléoptères nouveaux de la Faune circa—Méditerranéenne," par Reiche. "Melancrus nouveaux et Rectifications," par Guérin-Méneville, "Clytides de l'Ancienne Colombie — Observations et notes synonymiques," par Chevrolat. 'Coléoptères Nouveaux," par Gautier des Cottes. "Deux Buprestides nouveaux," par H. Deyrolle. "Note sur le Chrysodema erythrocephala; "Métamorphoses de l'Aracerus fasciculatus," par H. Lucas. "Coléoptères du Chili: Staphyliniens," par Fairmaire et Germain; "Larve du Teretrius parasita; Metamorphoses du Trachys pygmæa," par Leprieur. "Remarques sur les Métamorphoses du Trachys pygmæa," par Léon Dufour. "Etudes sur quelques Orthoptères Exotiques du Musée de Genève," par H. de Saussure. "Orthoptères exotiques rare ou nouveaux," par Coquerel. "Deux Homoptères nouveaux étrangers," par Signoret. "Recherches sur la chaleur Animale des Articules," par Girard. "Supplement à la Monographie des Histerides," par de Marseul.

Among the subjects recently announced to the Entomological Society of France are two of much interest:—1. That M. Bel, in capturing a beetle at Senegal, had received from it a shock analogous to that produced by the application of electricity; and it appeared, from his inquiries, that the negroes know the beetle, which always causes a tremor when they seize it. Unfortunately, the name of the insect was not determined, but means will be taken to verify the fact of its reputed electricity, and to procure specimens of the beetle. 2. M. Guénee announces that, with the aid of M. Oberthür, of Rennes, he has prepared, and will shortly print, a 'List of the Lepidoptera of Europe.' He says, "This Catalogue will be based, like that of Mr. Doubleday, upon my system, and will contain all the Divisions and Sub-divisions, but without generic characters. The synonymy will be very short, but scrupulously verified. The varieties forming race, those which have received distinct names and the principal aberrations, will be mentioned, together with the page or the figure of the work where they may be found. The habitat will be stated precisely and the times of appearance rectified. Finally, the indication of the food of the caterpillar, where it is known, will follow each species, and thus will point out those of which the early state is unknown."

'Entomologische Zeitung; herausgegeben von dem Entomologischen Vereine zu Stettin,' 22 Jahrgang, Stettin, 1861. One plate.

Nos. 1—3. Philippi, J., "Chilenische Telephorus." V. Heyden, "Fragmente." Moore, "Bombyx Mori und Huttoni." Dohrn, "Epilogus." Osten-Sacken, "Entomologische Notizen." Herrich-Schäffer, "Uber Gastropacha arbusculæ." V. Heyden, "Antwort an G. Koch." V. Siebold, "Agriotypus armatus." Keferstein, "Mittheilungen." Werneburg, "Hesperia — Arten. — Lepid. Notizen." Hagen, "Insecten Zuge." Altum, "Lepidopterisches." Suffrian, "Synon. Misc." Dohrn, "Aphileus lucanoides." Mengelbir, "Reiseskizzen." Gartner, "Polia aliena." Hagen, "Literatur."

Nos. 4—6. Hagen, "Die Phryganiden Pictets nach Typen bearbeitet." Mengelbir, "Reiseskizzen aus den Alpen." Kawall, "Entomologische Mittheilungen." Mink, "Entomol. Notizen." Stäl, "Miscellanea Hemipterologica." Mengelbir, "Reiseskizzen aus den Alpen." Sharswood, "Beitrag zu einem Nekrolog des Majors J. Eatton Le Conte." Rathke, "Studien zur Entwicklungsgeschichte der Insekten." Von Prittwitz, "Die Generationen und die Winterformen der in Schlesien beobachteten Falter." Koch, "Kritik und Antikritik des Hrn v. Heyden."

Nos. 7—9. Rathke, "Studien zur Entwicklungsgeschichte der Insekten." Schaufuss, "Die Europ. ungeflügelten Arten der Gattung Sphodrus, *Dej.*" Hagen, "Insekten Zwitter." Staudinger, "Ueber einige neue und bisher verwechselte Lepidopteren." Dohrn, "Melolontha (Polyphylla) hololeuca, ♀." Micklitz, "Beitrag zur Bastardfrage." Freyer, "Lepidopterologisches." "Erinnerung an Jacob Hübner." "Literatur." (Thomson, Wilde).

Nos. 10—12. Gerstäcker, "Gattung Sapyga." Werneburg, "Geometra Pomonaria." Schaufuss, "Anthicus vittatus und Bruchus pallidipes." Wocke und Staudinger, "Reise nach Finmarken." "Alphabet," "Verzeichniss dazu." Osten-Sacken, "Gallen und Pflanzendeformationen in Nord-Amerika." Schaufuss, "Zwei neue Silphidengattungen." Tischbein, "Monstroser Ichneumon luctatorius." Suffrian, "Synon. Misc." Keferstein, "Parthenogenesis bei Lepidoptera." Hagen, "Literatur." (Razumowsky). Glaser, "Cossus—Entwicklung im todten Leibe." Fischer, "Zur Catalogs—Literatur." Von Kronkelm, "Ueber ölige Schmetterlinge." Hering, "Nachwort dazu." Gerstäcker, "Berichtigungen zu Sapyga." Dutreux, "Für Engadin—Excurrenten."

In the ' Proceedings of the Society ' are two interesting notices :— one, that Dr. Chapuis, of Verviers, is about to publish a Monograph of the Scolytidæ ; the other, that Herr C. Stäl, of Stockholm, will publish, in the ' Acta Upsalensis,' a Monograph of American Chrysomelidæ.

Of the ' Linnæa Entomologica,' published by the Stettin Society, Vol. xv., which is to contain the conclusion of Suffrian's " Monograph on the Cryptocephalidæ," has been delayed in consequence of the author of that paper having been unable to finish it in time, but the volume, it is expected, will be published in the present year.

' Berliner Entomologische Zeitschrift ; Herausgegeben von dem Entomologischen Vereine in Berlin.' Fünfter Jahrgang, 1861. Two plates and a portrait of Märkel. Contains :—

Coleoptera.

" Die Ateuchiden ohne Fusskrallen, Monographisch bearbeitet," von H. Burmeister.

" Eine Decade neuer Cicindelen aus dem Tropischen Asien," von H. Schaum.

" Die Bedeutung der Paraglossen," von H. Schaum.

" Beiträge zur Kenntniss einiger Coprophagen."

" Lamellicornien," von E. v. Harold.

" Beitrag zur Kenntniss einiger Carabicen—Guttungen," von Baron v. Chaudoir.

" Beitrag zur Käferfaune Griechenlands ; Siebentes Stück : Tenebrionidæ, Cistelidæ, Lagriariæ, Pedilidæ, Anthicidæ, Mordellonæ, Meloidæ, Œdemeridæ," von H. v. Kiesenwetter.

" Eine Entomologische Excursion in das Wallis nach dem Monte Rosa in Sommer, 1861," von H. v. Kiesenwetter.

Diptera.

" Ueber die Afrikanischen Trypetina," von Director H. Loew.

" Diptera Americæ septentrionalis descripsit H. Loew. Centuria prima."

Hymenoptera.

" Die Ponera—artigen Ameisen," von Dr. J. Roger.

" Deutsche Braconiden," von J. F. Ruthe. Aus dessen Nachlass veröffentlicht, von H. Reinhard. Zweites Stuck.

" Myrmecologische Nachlese," von J. Roger.

Lepidoptera.

" Ueber die Krankheit des Seidenspinners und die Erziehung einer gesunden Brut desselben," von Prof. Chavannes.

' Kleinere Mittheilungen :'—

" Ueber Coleoptera," von Baudi di Selve, P. Habelmann, M.Wahnschaffe, H. Fuss, W. Fuchs, W. Scriba, C. Wilken, W. Koltze, C. v. Heyden, Schaum, v. Chaudoir, G. Kraaz.

" Sammelbericht," von J. Brauns, W. Koltze, G. Schreiter, W. Fuchs.

" Ueber Lepidoptera," von C. Kretschmar, A. Libbach.

" Ueber Hemiptera," von H. Tieffenbach.

" Ueber Hymenoptera," von v. Kiesenwetter.

" Sammelbericht," von Dr. Taschenberg.

' Synonymische Bemerkungen : '—

" Ueber Coleoptera," von v. Chaudoir, Schaum, Kraatz.

' Zeitschriftschau.'

' Neuere Literatur.'

' Correspondenzblatt für Sammler von Insecten, insbesondere von Schmetterlinge,' Nos. 13—24, 1861, Regensberg. Dr. Herrich-Schäffer announces that this periodical will cease to appear in its present form, and will be amalgamated with some monthly journal which is not exclusively entomological.

' Bulletin de la Société Imperiale des Naturalistes de Moscou,' 1860 and 1861.

" Matériaux pour servir à l'étude des Cicindélètes" (No. 4); " Matériaux pour servir à l'étude des Carabiques ;" " Description de quelque espèces nouvelles d'Europe et de Syrie appartenant aux Cicindélètes et Carabiques ;" all by M. de Chaudoir.

' Bulletin de l'Academie de St. Petersbourg,' Tome iii. :—

" Beschreibungen neuer Lepidopteren aus Ostsibirien und dem Amurland."

' Archiv für Naturgeschichte,' von Troschel, 1860 and 1861 :—

1. " Beschreibung einer Œstriden—Larve aus der Haut des Menschen,," von Dr. E. Grube. Dr. Schaum, in the ' Berlin Zeitschrift,' says, " The larva here represented is, according to the observations of

Frantzius, now rare in Costa Rica; it differs from Caterebra noxialis, but the fly is hitherto unknown."

2. "Ueber Kalkablagerung in der Haut der Insecten," von F. Leydig.

3. "Die Larvenzustände der Musciden," von Prof. Dr. R. Leuckart.

4. "Ueber das Vorkommen von ausstülpbaren Haut-Anhängen," von Dr. A. Gerstaecker.

'Archivis per la Zoologia, l'Anatomia et la Fisiologia,' publ. p. c. di S. Canestrini, G. Doria, P. M. Ferrari e M. Lessone, Genova Giugno, 1861 :—

"Snl Pteromalino parasito delle nove de Rhynchites betuleti c. fig," by Filippi.

'Horæ Societatis Entomologicæ Rossicæ," Fasc. 1, Tab. 4, illustratus, Petropoli, 1861.

'Annales des Sciences Naturelles,' Paris, 1860 : —

"Recherches Anatomiques sur l'Ascalaphus meridionalis, *Charp*," par M. Léon Dufour.

"De l'influence du système nerveux sur la respiration des Dytisques," par M. E. Faivre.

'Annales de la Société Linnéenne de Normandie,' Caen, 1861 :—

"Synopsis des espèces Normandes du Genre Micropeplus," par Fauvel.

British Entomology.

If we may judge by the number of foreign publications, Entomology seems to be flourishing on the Continent. But when I turn to England I am compelled to think that Entomology, if not retrograding, is not advancing, at least in a scientific form. The Editor of the 'Intelligencer' says "We doubt much if we could now make out a list of 500 English entomologists," although the list in the 'Annual' for 1860 contained 1224 names, and he attributes much of the defection to the Volunteer Movement. This is, probably, a reason to a considerable extent, but perhaps another reason is, that a great many of those enumerated as entomologists were simply lads at school who had a liking for catching butterflies, which ceased with their school-days, and the majority of them possibly would never have become anything more than collectors: so it may be that scientific Entomology has lost but little by the diminution of the number of col-

lectors of the grade alluded to. It is true that some few of the defaulters might, in after years, have been worthy of the name of entomologist, and it is legitimate to hope that where the germ of a true love of the Science existed it may yet bear fruit; but I confess that a science which, like Entomology, must be cultivated for its own sake, has in this country but small prospect of numerous adherents. In England so large a proportion of the population is brought up under the Upas-like shade of the business-tree, and is taught practically, if not theoretically, to regard as scarcely worth attention everything that does not "pay," that it is only here and there that we can point to a man who loves Science for itself and finds his reward in its cultivation. Even when a man would devote some attention to science, the deadly struggle, not only for existence but for wealth, in which he finds himself involved, abstracts so much of his life, that only fragments of time can be rescued for intellectual work, and he can do little more than observe what has been done by others. In the upper and wealthier classes it is rare to find an individual who cultivates pure science, or works at it in such a way as to make his mark on the page of his era; there are noble exceptions, but few of them are entomologists. Either from want of natural bias, from deficiency in our educational systems, or from absolute want of time, the tone of our age with regard to all science which does not present material advantages is not philosophic, and so in other branches of non-productive natural science besides Entomology there is a want of students.

Notwithstanding these drawbacks there are yet some, in different stations of life, who manage to give more or less time to Entomology, and great would be the advantages to themselves and science if the younger men at least were awake to the dignity of its philosophy; if they would seek to penetrate beneath the surface of the subject under notice, and endeavour to behold the majesty of the divinity that dwells in the midst of the mysteries before them. But for this there must exist the pure and ardent desire to know,—the first requisite of a worshipper of Nature,—and a perseverance in watching in silence and seclusion until the goddess reveals herself. At this feast of reason no one need wait as a beggar for the crumbs broken off by others that fall from the table, but each guest is expected and invited to reach forth his hand and help himself. The domain to be explored is

"Boundless, endless and sublime;"

the only obligation laid upon those invited being that to whom much is given of him much will be required, and that the least an observer can do is to make known his discoveries to others. At this point a Society like this comes to his assistance with its publications, its meetings, and its library, and thus the young student can learn what new insight into Nature has been vouchsafed to him, and find an opportunity of telling it to his fellow men.

In such a spirit should I like to see Entomology pursued and this Society supported. Now observers, for the most part, observe with too little continuity of purpose; even those who have microscopes work to no definite end, the result of their labours being only isolated facts, from which, however beautiful and wonderful in themselves, no general principles are deduced. On the Continent there is a better state of things. Each of the Entomological Societies of France, Stettin and Berlin, publishes yearly double the quantity of matter that this Society does, and far exceeds ours in the number of its members. If English entomologists, sinking all personal feelings, would all associate within the pale of this Society, they could, notwithstanding their many disadvantages, accomplish work that would redound to the credit of Entomology in a far greater degree than their antagonistic attitudes, individual efforts, or positive indifference, have hitherto permitted. Whether this "consummation devoutly to be wished" will ever arrive, it would be hazardous to predict; one thing is painfully evident that hitherto English entomologists have not by general co-operation done for their Science all they could. I hope yet to see that the English entomologists who have not hitherto joined us may be convinced that by enrolling themselves as Members, the Society would have enlarged means of advancing the interests of the Science of which they are adherents.

And, now, gentlemen, it only remains for me to say that I trust this Society has not deteriorated in position or usefulness during the period I have occupied the Chair, and that I shall ever preserve a grateful recollection of the kindness and support you have accorded to me as your President.

Report of the Council to the Society, January 27th, 1862.

Our Library has received numerous additions during the past year, from other societies and individuals; our books generally are in a good state of preservation. The plates composing our copy of Hübner's 'European Lepidoptera,' obtained at the sale of the late Mr. Heysham's library, having been compared by Mr. Stainton with his copy of that work, and the series being found perfect, it has lately been placed in the binder's hands.

The Collections, we regret to say, are in an unsatisfactory state of arrangement: this matter has been very recently brought under consideration; the incoming Council will no doubt take the necessary steps to put them in a better condition.

We have much pleasure in congratulating the Society upon the favorable state of its finances, as shown in the Treasurer's accounts, audited this day.

J. W. DOUGLAS, *President.*

Liabilities and Assets of the Society.

Liabilities.	£	*s.*	*d.*
Mr. Wilkinson for printing Plates	5	13	9
„ Bright for Lamp-cleaning	1	6	6
„ Standish for colouring	0	15	6
Rent to Christmas	11	5	0
Messrs. Day for Plates	0	12	6
Mr. Dunn for Oil	1	8	6
	£21	1	9

Assets.	£	*s.*	*d.*
Arrears of Subscriptions, good	9	9	0
Ditto doubtful £10 10 0			
Add Balance in hand	122	6	4
	131	15	4
Less amounts due at Christmas	21	1	9
True Balance in favour of the Society	£110	13	7

Abstract of the Treasurer's Accounts for 1861.

RECEIPTS.

	£	s.	d.
By Balance in hand January 1st, 1861	105	4	2½
Arrears of Subscriptions	15	15	0
Subscriptions for 1861 (109)	114	9	0
Admission Fee	2	2	0
Compositions (3)	47	5	0
Tea Subscriptions	12	3	0
Sale of Transactions at the Rooms £3 4 6½			
„ at Longmans' 27 17 11			
	31	2	5½
Cash of Mr. Stainton towards removing	25	0	0
„ of Mr. Saunders for Gas-fittings	12	15	0
„ of Mr. Parrell	5	0	0
„ of Mr. Wollaston for Colouring	1	5	0
Two Quarters' Dividend on £109 14*s.* 9*d.* 3 ℔ Cent Consols	6	11	8
	£378	12	4

PAYMENTS.

	£	s.	d.
To paid arrears for 1860:—Rent to Christmas 20 0 0			
Messrs. Roworth for printing Transactions 13 5 6			
Messrs. Duleau for Books 3 12 6			
„ Day for Plates 3 4 0			
Mr. Dunn for Oil 2 6 0			
	42	8	0
Insurance to Lady-day, 1862	2	10	0
Curator for attendance	18	4	0
„ Sundry small payments	0	4	9
Tea, thirteen Meetings	13	13	0
Attendance, Coals, &c.	4	17	4
Postage, Parcels, Stationery, &c.	4	0	9
Christmas-boxes	0	5	0
Printing Transactions, three Parts	63	4	3
„ Proceedings, &c.	8	10	6
Engraving Plates	10	2	6
Colouring Do.	30	11	5
Printing Do.	7	8	0
Collector's Commission	0	11	6
Messrs. Holmes and Impey, Rent to Michaelmas	21	5	0
Do. towards Alterations	15	0	0
Messrs. Partridge and Crutch, Gas-fittings, &c.	13	10	0
Balance in hand	122	6	4
	£378	12	4

February 3, 1862.

Frederick Smith, Esq., President, in the chair.

The President thanked the Society for having selected him to fill the chair; and nominated Messrs. Lubbock, Pascoe and W. Wilson Saunders to be his Vice-Presidents.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'The Journal of Entomology,' No. 4; presented by the Proprietors. 'The Athenæum' for January; by the Editor. 'The Journal of the Society of Arts' for January; by the Editor. 'The Zoologist' for February; by the Editor. 'Sitzungsberichte der Königl. Bayer. Akad. der Wissenschaften zu München,' 1861, Heft V.; by the Academy.

Exhibitions.

Mr. Dunning suggested that the accuracy of the minutes would be increased, and the value of the Society's 'Proceedings' materially enhanced, if each Member who made exhibitions, or took part in the discussions or conversations thereupon, would have the goodness to hand to the Secretary, either during or at the close of the Meeting, or to transmit to him by post, a brief note containing the substance of his communication to the Society, the names of insects referred to, and the authorities for those names, references to authors quoted, and generally any facts narrated or opinions expressed by the Member, which he thinks it desirable to have recorded. It was scarcely advisable to trust more than necessary to the Secretary's memory or power of rapid reporting; and Mr. Dunning thought that whilst the carrying the above suggestion into effect would be a great convenience to the Secretary, it would entail but slight inconvenience on each individual Member.

Mr. Lubbock exhibited a magnified drawing of a singular Dipterous larva found under logs of wood; he was unable to state to what family it belonged, but hoped to breed the perfect insect.

Professor Westwood, though at first inclined to consider it the larva of one of the Muscidæ, thought it most probably referable to some species allied to Platypeza.

Mr. Walker remembered having, some years ago, found flat larvæ adhering closely to damp wood, and somewhat resembling that represented in Mr. Lubbock's figure: he agreed with Professor Westwood that the larva did not belong to the Muscidæ.

Mr. Stainton exhibited a living pupa of the Lepidopterous genus Micropteryx, and a highly-magnified coloured drawing of the same, and read the following notes thereon:—

"The wing-cases, legs and antennæ are perfectly free from the body, the abdomen being able to move away from them to a considerable extent.

"The abdomen of the pupa I examined was in almost constant motion, both to and from the wing-cases, and with slight lateral motion.

"Neither the wing-cases nor the legs appear to have any individual power of motion, but the end of the abdomen would frequently move the ends of the legs by knocking against them.

"The abdomen was remarkably soft and flexible, reminding one rather of a female Psyche.

"In front of the head one seems to distinguish both pair of palpi, the antennæ and legs, the legs being longer than the antennæ, for which I at first mistook them.

"The antennæ were not symmetrical in the specimen I examined, that on the left side being close to the leg-cases, that on the right side lying nearly across the centre of the wing.

"Below the eyes and above the palpi appears a brown knob, which may possibly represent the tongue; it bears numerous bristles: immediately beneath it are two large brown projections, the use of which I am utterly at a loss to conjecture; they expand towards the tips, which are scalloped obliquely.

"Between the eyes, but above them, is a slight protuberance or beak, which is nearly transparent; above it are again some strong bristles.

"On the back a slender semi-transparent membrane projects upwards from the first abdominal segment.

"The head is very clearly separated from the thorax, and between the two is a neck or collar."

The larva was a birch-feeder, but, the perfect insect not having yet been bred, the species was unknown. The appearance of the imago of Micropteryx had long since suggested a doubt whether that genus was truly Lepidopterous or Trichopterous: the pupa now proved to be, as it were, midway between the proper pupa-forms of those orders.

Mr. M'Lachlan remarked that though the pupa was certainly a connecting link between Lepidoptera and Trichoptera, it could not be claimed as belonging to the latter order: the legs and antennæ did not appear to be entirely free, as was always the case in Trichopterous pupæ. Moreover, the form of the larva showed that the insect was properly retained among the Lepidoptera.

Professor Westwood thought the curious neck-tie-like appendage with scalloped edges must be the covering of one of the pairs of palpi.

Mr. Janson exhibited seven species of Coleoptera, hitherto unrecorded as inhabitants of Britain, *viz.*:—

1. Patrobus clavipes, *Thomson*, *Sk. Coll.* 25, 2 (1857); *Skand. Coll.* i. 214, 2 (1859). Taken by the late H. Squire near Lerwick, Shetland, in August, 1858.

2. Harpalus (Ophonus) diffinis, *Dejean*, *Spec. gen.* iv. 196, 4 (1829); *Icon.* iv. 95, 4, tab. 179, f. 4 (1834). *Fairm. et Laboulb. Faune Ent. Franç.* col. i. 121, 2 (1854). *Schaum*, *Naturgesch. d. Ins. Deutschl.* i. 573, 3 (1860). Taken by himself near Croydon, Surrey, in September, 1860.

3. Harpalus (Ophonus) parallelus, *Dejean*, *Sp. gen.* iv. 219, 25 (1829); *Icon.* 120, 25, tab. 183, f. 4 (1834). *Schaum*, *Naturgesch. d. Ins. Deutschl.* i. 580, 12 (1860). Captured by the late H. Squire, on the Sussex coast, February, 1858.

4. Aleochara mœrens, *Gyll. Ins. Suec.* iv. 493, 53—54 (1827). *Eric. Gen. et Spec. Staph.* 169, 22 (1839). *Kraatz*, *Naturgesch. d. Ins. Deutschl.* ii. 103, 23 (1856). Aleochara lugubris, *Aubé*, *Ann. Ent. Soc. Fr.* 2me Ser. viii. 313 (1850); *Fairm. et Laboulb. Faune Ent. Franç.* col. i. 448, 19 (1856). Found by the late J. Foxcroft, in Perthshire, in 1855.

5. Homalota Thomsoni, *Janson*. Homalota nigricornis, *Thomson*, *Ofv. af Kön.*

Vet. Acad. Förh. 142, 42 (1850). *Kraatz, Naturgesch. d. Ins. Deutschl.* ii. 281, 88 (1856), *nec* Steph. Aleochara excavata? *Gyll. Ins. Suec.* iv. 490, 30—31 (1827). Captured by himself, near Hampstead, Middlesex, April, 1857.

6. Xantholinus atratus, *Heer, Faun. Col. Helv.* i. 246, 7 (1839). *Kraatz, Naturgesch. d. Ins. Deutschl.* ii. 636, 5 (1857). Discovered by himself in a nest of Formica rufa, near Highgate, Middlesex, October, 1856.

7. Thinobius brevipennis, *v. Kiesenw. Stettin. Ent. Zeit.* xi. 221 (1850). *Kraatz, Naturgesch. d. Ins. Deutschl.* ii. 885, 5 (1858). Taken by himself in Holme Fen, Huntingdonshire, May, 1859.

Mr. Ruspini exhibited a coloured figure of a variety of Lycæna Phlæas. The specimen was captured on Norwood Common in the autumn of 1858, and was principally remarkable for the absence of the usual coppery border of the posterior wings, and for the presence on each of the same pair of wings of three straight rather broad sharply-defined radiating bars, of a bright copper colour.

Mr. Lubbock requested Members of the Society to supply him with any specimens of Thysanura which it might be in their power to furnish.

Dr. Wallace, after recalling to the recollection of the Meeting a letter addressed to him by Captain Russell, of Monk's Eleigh, Suffolk, and which was read at the Meeting of the Society held on the 2nd of December, 1861, now introduced Captain Russell to the Society, and exhibited on his behalf specimens of Callimorpha Hera, Argynnis Lathonia, Eulepia grammica, a suffused dark variety of Vanessa Urticæ, Anesychia Echiella, and an insect which was apparently Cabera rotundaria.

Captain Russell said that of Callimorpha Hera (which in Doubleday's 'List of Lepidoptera' was included amongst the "Reputed British Species") he captured five specimens on the 27th of July, 1859. The following is an extract from his diary for that day:—"Drove from Rhuabon to Wrexham; beautiful day, but very hot; about two miles from Wrexham some beautiful butterflies, one sort with brilliant scarlet wings; country very hilly, not well cultivated." Captain Russell was at that time unable to distinguish between Rhopalocera and Heterocera; and the "butterflies with brilliant scarlet wings" turned out to be C. Hera. The place where they were captured was a stony hill-side, quite uncultivated; the time about 5 P.M. The flight of the insects was sluggish, and from full flight their subsidence to perfect rest was apparently instantaneous. The wings lay flat upon the surface on which the insect rested, and none of the scarlet of the under wings was then visible. Each of the five specimens captured was taken off a bramble-leaf. The spot was revisited about 11 A.M. on the following day, but not a specimen was to be seen.

A. Lathonia was taken by Captain Russell on two occasions in August, 1859; on the first occasion five specimens; on the second two, in a meadow-field on the S.W. side of a wood belonging to Mr. T. P. Hitchcock, at Lavenham, Suffolk. The insects were shown, shortly after their capture, and whilst yet limp and not set out, to the late Professor Henslow, whose living of Hitcham was an adjoining parish to Monk's Eleigh: the Professor told him they were specimens of A. Lathonia, and added that he did not regard them as indigenous, but thought they must have been blown over from the Continent.

The specimen of Eulepia grammica was taken at the same place as C. Hera, on the occasion of Captain Russell's second visit to that spot, on the 28th of July, 1859. It was disturbed by a lighted fusee falling among some long grass; it flew with

amazing rapidity for a few yards and then suddenly disappeared: all efforts to discover it were unavailing, and the search was abandoned, when the insect was again disturbed by a stone casually thrown at a butterfly sitting on a neighbouring flower, when Captain Russell succeeded in securing it in his net.

The variety of Vanessa Urticæ was captured by Captain Russell, flying in a garden at Waltisham, Suffolk. The specimen was somewhat crippled, and he had at first thought it a hybrid between V. Urticæ and V. Antiopa.

The specimen of Anesychia Echiella, *W. V.* (A. bipunctella, *F.*), which was also placed amongst the "Reputed British Species" in Mr. Doubleday's List, was taken by Captain Russell in a chalk-pit at Chelsworth, Suffolk, in the summer of 1861.

The specimen of Cabera was bred from the larva, and the reason for its exhibition was, that out of sixteen larvæ precisely similar in appearance, and all fed upon alder, fifteen produced insects of the form known as Cabera pusaria, whilst the sixteenth produced the exhibited specimen, which was of the form known as C. rotundaria.

Mr. Rye exhibited specimens of Lathrobium geminum, *Kraatz*, and read the following notes on the characters which distinguish it from the allied species:—

"Lathrobium geminum, *Kraatz* (= L. elongatum, *Gyll.*) Hitherto confounded in our collections with L. elongatum, *Linn.*, and apparently almost as common.

"L. brunnipes, the first of the larger species, apart from its very distinct characters underneath in both sexes, is at once to be distinguished by its entirely black upper surface, all the others near it in size having the elytra more or less barred on the apical half with red or reddish brown; and although this colour is sometimes suffused all over the elytron, it is never so dark as in L. brunnipes.

"The next species, L. elongatum, *Linn.*, most closely resembles L. geminum in colour, punctuation and size; the only character on the upper side being the relative length and width of the thorax and elytra.

"In L. elongatum, *Linn.*, the thorax is decidedly narrower than, and not so long as, the elytra, whereas in L. geminum it is very nearly, if not quite, as wide and long as the elytra, imparting a broader and more robust look to the insect.

"It is, however, underneath that the chief differences are to be found, as usual in this genus.

"The male L. elongatum, *Linn.*, has on the middle of the lower surface of the penultimate segment of the abdomen a shallow longitudinal fovea, widening behind, with a thickly-elevated ridge of stiff black hairs on each side, and distinctly and acutely excised where it meets the hinder margin.

"In L. geminum the male has (in the same place) two short parallel ridges of black hairs and no acute marginal excision, each ridge terminating in a very gentle and scarcely perceptible flexuosity.

"The females of both, as in nearly all the genus, present no decided characters, the penultimate segment in each having the hinder margin beneath somewhat in the form of a cone truncated at its thick end with the corners slightly rounded, and this is perhaps more distinct in L. elongatum, but in both sexes the under-surface of the head presents sufficient difference to separate the two species, since in L. elongatum it is roughly and thickly punctured, and in L. geminum more sparsely and finely.

"The only remaining species at all like L. geminum is L. fulvipenne, which resem-

bles it in the relative proportions of the thorax and elytra, but is altogether as distinctly elongate and slender as L. geminum is robust and broad. In L. fulvipenne also the penultimate segment of the male beneath is quite destitute of hairy ridges, having simply a shallow and somewhat oval excision in the middle of the hinder margin. The punctuation of the under surface of the head is much the same as in L. geminum, but the general facies of the insect will at once distinguish it.

"Erichson appears to have remarked the difference in structure of the present L. geminum, but referred it to a *var.* of L. elongatum, *Linn.*"

Mr. Crotch exhibited Dermestes Frischii, *Kugelan*, and read the following notes:—

"Dermestes Frischii, *Kugelan*, *Erichson*, = D. vulpinus, *Illiger*, non *Fab.*

"This species, hitherto unrecorded as British, was taken somewhat plentifully by Mr. W. Farren, of Cambridge, under a dead horse in the New Forest, in the early part of the summer of 1860, in company with Dermestes murinus; hence it would appear to be a truly indigenous species, whereas D. vulpinus is in all probability introduced.

"It most closely resembles D. vulpinus, *Fab.*, from which it may be distinguished by the brighter colouring of the pubescence on the sides of the thorax, which is also conspicuously marked with a black spot at each hinder angle. Underneath, the middle spot on the last segment of the abdomen is purely terminal, whereas in D. vulpinus, *Fab.*, the spot is produced for the entire length of the segment. In D. vulpinus, *Fab.*, the apex of each elytron forms a small acute mucro, which is entirely wanting in D. Frischii. The scutellum also appears to be of a much brighter yellow in D. vulpinus, *Fab.*

"It may be as well here to observe that the insect termed Dermestes tessellatus of Waterhouse's Catalogue is evidently the D. undulatus of Erichson and Sturm, and Mr. Waterhouse agrees with me in this opinion."

March 3, 1862.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—'Proceedings of the Royal Society,' vol. xi. No. 47; presented by the Royal Society. 'The Canadian Naturalist and Geologist, and Proceedings of the Natural History Society of Montreal, conducted by a Committee of the Natural History Society,' vol. vi.; by the Society. 'The Zoologist' for March; by the Editor. 'The Intellectual Observer,' Nos. 1 and 2; by the publishers, Messrs. Groombridge and Sons. 'The Journal of the Society of Arts' for February; by the Society. 'The Literary Gazette' for February; by the Editor. 'The Athenæum' for February; by the Editor. 'List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part xxiii. Geometrites;' by the Author, Francis Walker, Esq., F.L.S., &c.

Certificates in favour of George Robert Gray, Esq., the Rev. T. H. Browne and Alfred Haward, Esq., as Members of the Society, were read a first time, and ordered to be suspended in the Meeting Room.

There were on the table, for distribution among the Members, copies of the Address delivered at the Anniversary Meeting on the 27th of January, 1862, by J. W. Douglas, Esq., President; also copies of an Address delivered at the ordinary Meeting on the 3rd of February, 1862, by H. T. Stainton, Esq.

The Society's Collection.

The President, by the desire of the Council, stated to the Meeting the steps taken by the Council in consequence of their attention having been called to the state of the Society's Collections: the Council had held two Special Meetings, had obtained from the Curator an explanation of the manner in which his time was employed, and, after full consideration thereof, had passed the following Resolution:—"That the thanks of the Council be given to the members of the late Library and Cabinet Committee for their very careful Report on the state of the Society's Collections; and the Council, having requested and obtained from the Curator an explanation with respect to the employment of his time when at the Society's Rooms, considers such explanation satisfactory."

The 'Transactions' of the Society.

The President announced that the Council had rescinded the Resolution of Council of the 7th of February, 1859, by virtue of which all Members and Subscribers whose subscriptions were not in arrear received the 'Transactions' gratis; that in future Members and Subscribers resident in or within fifteen miles of London would have to purchase the 'Transactions,' as was the case prior to February, 1859 (and see 'Bye-Laws,' ch. xxi.), but that the price to Members and Subscribers would be one-half the price to the public. It was also announced that with the forthcoming first part of a new volume would be commenced the "Third Series" of the Society's 'Transactions,' and that a general index to the five volumes of the second or "New Series" would be prepared and published as soon as possible.

Exhibitions.

Mr. Newman exhibited series of bred specimens of two British species of the genus Cabera. He remarked that each series had been arranged with the view of showing that the particular colouring supposed to be distinctive of Cabera rotundaria was nothing more than an intermediate state between an insect with two and one with three transverse lines or bars. In the upper specimens in each series there were but two transverse bars; in the specimens next following the first or basal bar appeared separating into two bars, yet these were almost contiguous; in the succeeding specimens they grew more and more distant, until at the bottom of the series, both in C. pusaria and C. exanthemaria, the three transverse bars were equally distinct and equidistant. The rounded form of the wings, which was supposed to have suggested the name of "rotundaria," was proved by this series to be equally instable.

Mr. Newman expressed his obligations to Mr. Thomas Huckett, who had bred the whole of the insects exhibited, and had arranged them as they now stood, affording a convincing proof that C. rotundaria was a mere variation, to which both the acknowledged species C. pusaria and C. exanthemaria were liable.

Mr. Huckett, who was present as a visitor, stated that the larvæ from which he had bred the specimens exhibited were all taken at the same time and place, and that he had but two species of larva, *viz.*, those usually known as the larvæ of C. pusaria and C. exanthemaria.

Mr. Dunning referred to the exhibition of Cabera rotundaria by Captain Russell, at the February Meeting of the Society, as corroborating Mr. Newman's conclusion, and stated that the question of the specific distinctness of that form had on several occasions been brought under the notice of the Northern Entomological Society, the members of which, who had had frequent opportunities of raising Cabera from the larva, had satisfied themselves that C. rotundaria was in fact but a variety.

Mr. S. Stevens exhibited some butterflies' eggs, sent to him by Mr. Nathaniel Plant, from Rio Grande. He was not able to give any further information concerning them.

Mr. W. Wilson Saunders exhibited the larva and pupa of Endomychus coccineus, which had been recently taken in the neighbourhood of Reigate, under the bark of a log of elm which was lying on the ground. The larvæ were found fifty together, and were apparently feeding on a white fibrous flocculent fungoid substance underneath the bark. They bore a very close resemblance to the larvæ of some species of Coccinella. Many of the perfect insects were found at the same time in company with the larvæ. It was a curious question how the parent insect, when laying her eggs, discovered the presence of the fungoid substance which was necessary for the sustenance of the larvæ to be born. It could not be by sight, and Mr. Saunders thought it was most probably by smell, which seemed to be the only sense that we know insects to possess to which such a discovery could be attributed.

Mr. Saunders also exhibited a piece of a branch of dead wood from South Africa, where it had been found by Mr. Cooper, tunnelled down the centre by a species of bee, Xylocopa divisa. The tunnel was round, very neatly constructed, with a circular orifice pierced through the bark, and was made for the purpose of nidification.

Mr. Saunders also exhibited two portions of the stem of a greenhouse creeper (Tacsonia), to show the effect of the punctures of the common mealy bug (Coccus) upon the bark. These punctures produce warty elevations, which are covered with a whitish skin, and are internally green and somewhat succulent. When the punctures are very numerous and the bark becomes covered with warts, the functions of the bark appear to cease, and great injury to the plant ensues. Mr. Saunders made some remarks on the desirability of a history of the insects peculiarly destructive to plants, of which so many new discoveries had of late years been made.

Mr. Saunders also exhibited the female, the egg and the young larva (?) of Extalosoma Hopei, a rare and interesting insect of the family Phasmidæ, from the New Hebrides. The eggs were polished, oval, of a dull mottled brown colour, and about one-tenth of an inch in length. The larva escaped from the egg at one end, throwing off from it a rounded operculum, in which was a deep circular impression. The larvæ forwarded as those of E. Hopei had no resemblance to the perfect insect, and, although evidently of the family Phasmidæ, it seemed very doubtful whether they belonged to the insect in question. They were long and thin in the body, with very long legs, and short rather stout antennæ. In the dried state they were of a dull black-brown colour.

Professor Westwood agreed with Mr. Saunders in doubting whether the larvæ could be those of Extalosoma Hopei, and thought they must be the larvæ of one of the long-legged species of Phasma.

Mr. Stainton exhibited a specimen of a Noctua new to the British Fauna, Toxocampa Craccæ, *W. V.*, a species stated by Guenée to feed on Vicia multiflora, and to be common in Austria, Germany and France, in July and August. The specimen exhibited had been taken, along with two or three others of the same species, by the Rev. E. Horton, on the north coast of Devonshire.

Dr. Knaggs exhibited a box of insects collected by Mr. James A. Carrighan, at Ararat, Victoria.

The President exhibited a case containing a fine collection of insect architecture, consisting of nests of bees, wasps and fossorial Hymenoptera. Amongst the more remarkable was a nest of a species of Larra, which closely resembled a piece of sponge, but which was no doubt composed of the scrapings of the stems and leaves of woolly plants. This nest was attached to the under side of a leaf, though the species of the genus to which the constructor of the nest belonged were usually burrowers in sandy banks, &c. Nests of a species of Pelopæus, composed of the dung of animals and attached to reeds, were also remarkable. The Pelopæi were the mud-daubers of North America, but the nest exhibited was from Port Natal. Many specimens of exquisite structure from Brazil were also exhibited, particularly the nests built by the wasps comprised in the genus Polybia. Altogether the case contained upwards of a hundred specimens of the architecture of insects.

The President also exhibited a Coleopterous insect which he characterized as not only a species new to Britain, but as belonging to a genus hitherto not represented in the British Fauna. The insect in question was brought to him by Dr. Power. Two specimens had very recently been taken in the New Forest. It appeared to the President to be identical with the species which in the British Museum collection was labelled "Endophlœus spinosulus, *Latr.*"

Mr. Pascoe, Mr. Janson and Professor Westwood, however, doubted whether the specimen exhibited were the true Endophlœus spinosulus of Latreille.

Mr. W. F. Kirby showed some specimen sheets of Dr. Hagen's 'Bibliotheca Entomologica,' which it was expected would be published in July next, at the price of ten shillings or thereabouts.

Dr. Wallace called the attention of the Meeting to a plan he had recently adopted of mounting Micro-Lepidoptera. He employed common wax lights, simply rolled and flattened out: they were at once soft and retentive of the small pins; portions could be cut of any length that might be requisite to hold the number of specimens which the collector placed in his cabinet, and the whole series of the insects be fixed in the cabinet by means of a strong pin passing through either end of the flat strip of wax. Dr. Wallace had found this plan very advantageous in moving large numbers of specimens, and especially so in averting accidents from letting the insects fall. The strip of wax acted as a parachute, and by its lightness averted the destruction which might otherwise befall the specimens.

The Secretary read, on behalf of Mr. George Wailes, of Newcastle, the following paper:—

Notes on Bembidium nigricorne, Gyll.

"It may not be uninteresting if I state the source whence the specimens of Bembidium nigricorne, *Gyll.*, alluded to by Mr. Waterhouse at the Meeting of the Society on the 6th of February, 1860, were derived, especially as the species has hitherto only been recorded as captured in the Scandinavian district of Europe. I first took it in

this vicinity (Newcastle), in May, 1827, in some numbers, and not finding it agree with any of the species described by Marsham, I waited till Mr. Stephens' 'Illustrations,' then just commencing, had reached the Bembidiidæ. Being equally unable to identify it with any of his descriptions I named it Tachypus nigripes, and during that and the two or three following years distributed it amongst my correspondents under that name. In this way the cabinets of Mr. Dale, Mr. Waterhouse, Mr. Babington, Mr. Sparshall, Dr. Howitt, Mr. Rudd, Mr. Stephens, Mr. Curtis, and no doubt others, were supplied; and when I arranged my own cabinet of Coleoptera, on the appearance of the second edition of Stephens' 'Nomenclature,' in 1833, I placed it there under the above name. Here the specimens remained, and the circumstances had escaped my memory until just before Mr. Waterhouse's notice was read before the Society, when my old friend Mr. Dale reminded me of them, saying he had forwarded a specimen to Mr. Waterhouse.

"It would appear that Gyllenhal had detected the species before me, as his volume was published in 1827. His description, as well as that of Jacquelin du Val, accords very well with my specimens, though I cannot help thinking that my name was the more appropriate one, as well as distinguishing it at once from Marsham's rufipes.

"I am sorry to trouble the Society with this trifling communication, but as our 'Transactions' afford the only printed means of intercourse with our continental brethren I may perhaps be excused doing so."

Mr. Walker read a description of a new genus and species of Noctuites. The insect described was unique. It was discovered at Halifax, Nova Scotia, by B. Piffard, Esq., and by him presented to the British Museum. It belonged to the family Glottulidæ of Guenée, and was described by Mr. Walker under the name of Phornacisa Piffardi.

Mr. W. F. Kirby read some "Notes and Observations on the Lepidoptera Rhopalocera occurring in the county of Sussex," and exhibited some specimens in illustration.

Captain Cox, after referring to certain letters and articles which had recently appeared in the 'Times' and other papers on the subject of the ravages committed by Scolytus destructor, objected to some of the statements therein contained, and in particular to the assertions that this subject seemed scarcely to have received from scientific men the attention it deserved, and that any method of prevention or cure seemed to be unknown. Captain Cox reminded the Society of the nature, extent and successful result of the experiments made by himself during the last twenty years, and maintained that his plan of partially barking the affected trees was completely successful. He said that he had that morning been with the First Commissioner of Public Works to inspect the trees in the Parks, which were in a bad state.

Captain Cox also made some remarks on the injury done to the oaks by Sesia Cynipiformis, and to the lime trees by Chrysoclysta Linneella, and suggested that the lime trees should be treated in the same way as the elms which were attacked by Scolytus.

April 7, 1862.

F. Smith, Esq., President, in the chair.

Donations, &c.

The following donations were announced, and thanks ordered to be given to the donors:—'The Transactions of the Linnean Society of London,' Vol. xxiii. Part 2; presented by the Society. 'Kongliga Svenska Fregatten Eugenies Resa omkring Jorden under befäl af C. A. Virgin aren 1851—1853, Insekter,' Parts 4 and 5; by the Kongl. Svenska Akademien i Stockholm. 'Notes on the Generative Organs, and on the Formation of the Egg in the Annulosa,' by John Lubbock, Esq., F.R.S.; by the Author. 'The Journal of the Royal Agricultural Society of England,' Vol. xxii. Part 2; by the Society. 'Exotic Butterflies,' Part 42; by W.W. Saunders, Esq., F.R.S., &c. 'Sitzungsberichte der Königl. bayer. Akademie der Wissenschaften zu München,' 1861, ii. Heft 2; by the Academy. 'The Canadian Naturalist and Geologist,' Vol. vii. No. 1; by the Natural History Society of Montreal. 'The Zoologist' for April; by the Editor. 'The Proceedings of the Royal Society,' Vol. xi. No. 48; by the Society. 'The Intellectual Observer,' No. 3; by the publishers, Messrs. Groombridge & Sons. 'Catalogus Coleopterorum Europæ, auctore H. Schaum, Editio secunda aucta et emendata;' by the Author. 'The Athenæum' for March; by the Editor. 'The Literary Gazette' for March; by the Editor. 'The London Review' for March; by the Editor. 'The Journal of the Society of Arts' for March; by the Society. 'Stettiner Entomologische Zeitung.' 1862, Nos. 1—3; by the Society 'A List of British Hemiptera (Heteroptera), with Allied Species found in Northern and Central Europe which may be expected to occur in Britain,' by J. W. Douglas and John Scott; by the Authors. 'List of the Specimens of Lepidopterous Insects in the Collection of the British Museum,' by Francis Walker, F.L.S., Part XXIV., Geometrites (continued); by the Author. 'Naturhistorisk Tidsskrift stiftet af Henrik Kroyer, udgivet af Prof. J. C. Schiödte;' by the Editor.

The following addition to the Library, by purchase, was also announced:—'Rhopalocera Africæ Australis; a Catalogue of South African Butterflies, comprising Descriptions of all the known Species, with Notices of their Larvæ, Pupæ, Localities, Habits, Seasons of Appearance, and Geographical Distribution,' by Roland Trimen, M.E.S.L., Part I., Papilionidæ, Pieridæ, Danaidæ, Acræidæ and Nymphalidæ.

Certificates in favour of W. H. L. Walcott, Esq., of 11, Vyvyan Terrace, Clifton, Bristol, and David Sharp, Esq., of 14, Newcastle Street, Strand, as Members of the Society, were read a first time, and ordered to be suspended in the Meeting Room. Certificates in favour of George Robert Gray, Esq., the Rev. T. H. Browne, and Alfred Haward, Esq., were read a second time.

Exhibitions.

Mr. Stevens exhibited a box of Coleoptera and Lepidoptera from the Cape of Good Hope, and a specimen of Bryaxis Lefebvrei taken some years ago in the North of England, probably in Cumberland.

Pseudogynous Specimen of Liparis dispar.

Mr. Stainton, on behalf of Mr. Newman, exhibited a pseudogynous specimen of Liparis dispar, and read the following notes thereon by Mr. Newman:—

"At page cxl. of the Appendix to the 'Zoologist' for 1851 I have attempted to differentiate four classes of phenomena usually comprehended and confounded under the word 'hermaphrodite:' one of these phenomena I have called Pseudogynism, that is, falsely or imperfectly female. At that time I believed, and still believe, the phenomenon of pseudogynism chiefly confined to endosteate animals, and especially to the ox tribe, in which they are familiarly known as free martins. I have now the pleasure of submitting to your notice a pseudogynous specimen of Liparis dispar, being the first instance I have seen of pseudogynism among insects, or indeed among exosteate animals. The sexual characters are most singularly blended; the antennæ are those of a male; the outline of the wings is exactly as in a female; the spotted cilia, so conspicuous in the fore wings, is a female character; the termination of the abdomen is female, and the sexual organs are so completely female that the specimen now exhibited has been united for three hours with a male of the same species; but, although it lived for three days after the intercourse had taken place, no eggs were laid, and the abdomen is hollow, never having contained eggs. I am indebted to Mr. Parke, of Stanway Old Hall, near Halifax, for the opportunity of exhibiting this singular and at present unique illustration of aberration from the usual order of Nature."

Dr. Wallace remarked that the circumstance of a female moth, in which no eggs had ever been developed, having nevertheless united in copulation with a male, was peculiarly interesting: he had frequently found that insects, whose appearance had been artificially forced by heat or otherwise, had their ovaries undeveloped; but in such cases he had never observed copulation to take place.

Orgyia Ericæ, &c.

Mr. Stainton exhibited a female of Orgyia Ericæ, a species not yet found in this country, though possibly it might be expected on heaths in the South of England, being not uncommon in the North of Germany and Belgium. He called attention to the shortness of the legs, and remarked that his attention had been attracted to the insect by a brief notice in the last volume of the 'Annales de la Société Entomologique Belge,' that this female did not quit the cocoon. It was well known that the female of Orgyia antiqua came out of its cocoon, and that the female of O. Ericæ should remain inside its cocoon seemed so extraordinary that he had been led to refer to what had been observed respecting other females of this genus, and rather to his surprise it had transpired that the non-exclusion from the cocoon of the female Orgyia was the rule. The earliest notice had appeared in the 'Annales de la Société Entomologique de France' in 1832, where Rambur had described O. rupestris, and had remarked that the female never came out of the cocoon, but had intercourse with the male through a hole at one end of the cocoon, and then deposited its eggs in the interior of the cocoon. In the 'Annales de la Société Entomologique de France,' in 1834, the Count de Saporta had made a similar observation with regard to O. trigotephros, and had described very graphically the result of the laying of eggs by the female, remarking that she seemed really to dissolve into eggs, for that after the eggs were all laid there was nothing of the female left, for her remains were so small as to

be hardly perceptible. In the Stettin 'Entomologische Zeitung' for 1858 a German entomologist, of the name of Schmidt, had observed that none of his females of O. Ericæ emerged from the cocoon, but not expecting such a habit, and being unaware of any previous similar observations, he had allowed them to remain and to die in their cocoons without any opportunity of pairing with the males. Herr Schmidt had, with true caution, not ventured to announce this anomalous habit as an established fact, but possibly as an accidental occurrence, which, however, rendered further observations desirable. Dr. Breyer, of Brussels, had lately made further observations respecting the female of O. Ericæ. But the most extraordinary observation that had yet appeared was in the last number of the Stettin 'Entomologische Zeitung,' where there was an account of the habits of O. dubia (a species not uncommon in the South of Russia), by Herr Christoph. The female of that species never left the cocoon; but instead of the male copulating with it through a hole at the end of the cocoon, he went into the interior of the cocoon, and copulation took place there, after which the male came out of the cocoon in a very deplorable condition, and not exactly fitted for a cabinet specimen. Of the six European species of the genus Orgyia, of which the females were known, it thus appeared that in four, the female never left the cocoon, the only two in which the female emerged from the cocoon being O. antiqua and O. gonostigma.

Mr. Stainton remarked that he had not himself had opportunities of observing the habits of the female of O. gonostigma, but possibly some gentleman present might be able to speak as to its quitting the cocoon. Looking at the specimens exhibited of O. Ericæ, O. gonostigma and O. antiqua, it would appear that the development of the legs in O. gonostigma was intermediate between the other two species; and doubtless the habits of the species, in quitting or not quitting the cocoon, corresponded with the greater or less development of the legs.

Mr. Shepherd stated that he had seen the living female of O. gonostigma, and that it did leave the cocoon.

Note on Xenocerus semiluctuosus.

Mr. Pascoe exhibited Xenocerus semiluctuosus, one of the Anthribidæ from the Moluccas, and read the following note thereon:—

"I have brought for exhibition specimens of Xenocerus semiluctuosus, *Blanch.*, two males and a female. The female differs remarkably from both, but one of the males is in the normal condition; the other is an example of 'dimorphism'; it is, in fact, so very different as to be readily taken for a distinct species. The whole antenna is scarcely longer than the penultimate joint of the normal male, while that joint in the dimorphous male is the shortest, if we except the first and third; indeed, nearly all the joints vary in relative length to an extraordinary degree. The differences between the two forms are generally very striking, and I need not enlarge upon them. Although I have seen specimens with the antennæ shorter than in the normal, and longer than in the dimorphous male, yet, so far as I know, there is a wide interval between the two forms, which, however, it is not unlikely may be filled up. There are four other species of Xenocerus known to me, and in each of them this dimorphous form occurs. I have also noticed it in two species of the allied genus Mecocerus. That a modification in one or other of some organs occasionally takes place in insects, I have long been convinced. When drawing up the list of Longicornia for Sir E. Tennent's work on Ceylon, I was so satisfied that Olenecamptus serratus, *Chev.*,

was a modified form of the common O. bilobus, *Fab.*, that I omitted it without hesitation; and I think it not improbable that many mimetic forms, especially among the Lepidoptera, are but cases of dimorphism, in some instances perhaps dependent on second broods. In another direction it shows that characters relied on as of the highest generic importance are in some cases not even of specific value."

A conversation on the subject of "dimorphism" ensued, in which Prof. Westwood, Mr. Waterhouse, Dr. Wallace, Rev. Hamlet Clark and Mr. Pascoe took part. Prof. Westwood recollected no instance of dimorphism in the antennæ, though instances of dimorphism in other parts, as *e.g.* the mandibles, had for some time been known; it was not uncommon in insects which possessed a remarkable development, in the male, of some particular organ (*e.g.* among the Lucanidæ, Onthophagi, &c.), to meet with specimens, in other respects of the male form, but which had that particular organ reduced to the female form. It had been suggested in Kirby and Spence that such specimens might be neuters; but Prof. Westwood regarded them rather as specimens whose full development had by some means or other been retarded and left incomplete.

Mr. Pascoe considered that there were many forms differing only in a single character from the characters of the male or female of well-established species, and that such were not entitled to rank as species or even sub-species, but were in fact only a third form.

Mr. Waterhouse thought that, in the division of insects to which reference had been made, it was the rule that three forms existed—the normal male and female, and the third intermediate, neuter or dimorphous, whatever its proper designation might be.

The President exhibited a monstrosity of Chrysomela Banksii, captured last season; it had the extremity of the right hind leg cleft into three distinct members, thus giving it very much the appearance of a bird's foot.

The President also, after referring to an exhibition made by him at the previous (March) Meeting of the Society, exhibited a living specimen of Endophlœus spinosulus, *Latr.* The insects, which had been captured by Mr. Turner in the New Forest, proved, on further examination, to be the true E. spinosulus.

Mr. Smith also exhibited what had been sent to him by Mr. Turner as the larva of Endophlœus, but which, in Prof. Westwood's opinion, was the larva of a Musca.

Mr. C. Fenn exhibited a specimen of Laphygma exigua, beaten from sallow-blossoms at Lewisham, on the 24th of March last.

Note on Varieties.

Mr. Fereday exhibited some specimens of the genus Tæniocampa, and read the following observations on "Varieties," suggested by the exhibited specimens:—

"At the Meeting of this Society held in August last year, two specimens of Lepidoptera were exhibited by me, which were pronounced by the more learned and experienced of the gentlemen then present to be varieties of Tæniocampa munda. Both specimens were taken near Croydon, the one (a male) on the 29th of March, and the other (a female) on the 6th of April last year. I did not feel at all satisfied of their being specimens of T. munda, and it was on that account they were exhibited. There seemed to me to be a peculiarity in their form, colour and general appearance, which I could not reconcile with any variety of T. munda known to me; and it is rather a singular

circumstance, if they are truly T. munda, that I should have taken two insects of that species so much alike, and so widely differing from the ordinary type of T. munda, without meeting with one of the ordinary type or of any other description, although I visited the same locality very many nights in March and April.

"I have, however, been able to commence an investigation, which I hope may result in a satisfactory solution, of the ever-recurring question of distinct species and varieties of Lepidoptera,—a solution which seems to me of considerable importance, and to require but little trouble and attention to obtain; and I am surprised that amongst so many Lepidopterists so little has been done towards promoting it. The received opinions on the subject are, I believe, grounded upon theory only, and have not been clearly proved to be correct; and it does appear to me that we ought not to accept as a fact anything which may be, but is not, established by direct and conclusive evidence.

"The female taken as before mentioned, on the 6th of April, 1861, produced a few eggs. The eight insects placed in a line below it I propose, for convenience, to call 'the specimens in question.' They are all the insects which I have been able to obtain from those eggs, and it will be observed that they are all, without any exception, as nearly as possible alike in colour, markings and general appearance, and only differ from the female parent in being a shade lighter and less red in colour. The larvæ were precisely similar to the larvæ of T. munda, so far as Dr. Knaggs and myself were able to judge by comparison with larvæ of the ordinary type of T. munda reared at the same time. Of the character of the male parent I am unfortunately ignorant, —whether it was an insect of the ordinary type of T. munda, or similar to the female, or otherwise,—the female having been already impregnated at the time she was captured.

"On the right of the specimens in question is a series of T. munda, the three top specimens having been bred (as I am informed by Dr. Knaggs, who has kindly lent them to me for comparison) from the eggs of a female of the ordinary type of T. munda, and it will be observed that they vary considerably in colour and markings.

"Messrs. Fenn have also lent me a long series of so-called 'varieties' of T. munda, collected by them from various sources.

"On the lid of the box are five specimens of T. instabilis, produced this year from the eggs of one female; and these also vary considerably.

"But of all these so-called 'varieties' there does not appear to be any evidence as to the male parents; and a question presents itself very strongly to my mind,—How are so-called 'varieties' produced, and have we any positive proof of their being the offspring of a male and female of one and the same species? I have not carried my experiments sufficiently far to enable me to furnish any decided proofs in answer to this question, and I am sorry that my departure to New Zealand will prevent my following up the experiments to any definite conclusion; but my friend Dr. Knaggs has kindly undertaken, although not holding similar views to mine upon the subject, to continue them, and is now feeding a quantity of larvæ produced from eggs which I have been fortunate enough to obtain from one of the specimens in question, after her copulation with her own brother. If these larvæ produce insects all alike, and similar in colour and markings to their parents and to the other specimens in question, I think it will afford a strong argument, in the absence of positive proof to the contrary, that what are called 'varieties' are in fact hybrids, the produce of the union of distinct species, and for the following reasons, *viz.*,—If the assumed fact, that from the

union of a female of any particular species with a male of the same species a variety of that species may be obtained, is correct, how would the absence of variety in this instance be explained? The specimens in question are said to be a variety of T. munda, a species described as particularly variable; and yet here would be a case of two generations in which no variety was produced. If it is said that the tendency of a variety of a species may be to propagate an offspring bearing its own type of colour and markings, then how is a species to be distinguished from a variety? But it may happen that the larvæ in question, now in the course of being reared, may produce a variety of insects. In that case the fact of the existence of varieties will be proved by the result of actual experiment, instead of resting, as I apprehend it now does, upon theory only. To prove that so-called 'varieties' are varieties and not hybrids, I contend that it is not sufficient to prove their descent from a particular female, but there must be evidence of the male parent having been an insect of a precisely similar type to that of the female parent, because, if the male varied from the female, the very question upon which I raise an issue is again involved.

"I shall be glad to know if any one has actually obtained varieties of any species of Lepidoptera from an union, which they have been able to prove, between a male and female of one and the same species and type. I do hope that some of the gentlemen here present will try the experiment. My desire is to obtain actual and positive proof, the only ground upon which received facts in any science ought to stand.

"I make these observations with all due deference to the opinions of those who have more experience and knowledge than myself, and shall be only too happy to be corrected by them in any error I may have fallen into upon the subject.

"I should observe that the specimens in question are not in such good condition as bred specimens usually are, in consequence of their having been kept for some time in the cage for the purpose of obtaining eggs; and I may also observe that their larvæ were some of them fed upon sallow and some upon apricot, and that so far Mr. Gregson's statement, as to creating varieties of insects by feeding the larvæ on different kinds of plants, is not borne out."

Note on Argynnis Cybele and A. Aphrodite.

The Secretary read the following paper, by Mr. Walker, "On Argynnis Cybele and A. Aphrodite":—

"I have received from Mr. Edwards, of Newburgh, U.S.A., a form of Argynnis allied to Cybele and Aphrodite, which throughout this communication is spoken of as No. 1. I wish to lay before the Society an extract from a letter addressed to me by Mr. Edwards, which has some reference to the geographical distribution of species or of varieties. Mr. Edwards writes as follows:—

"'I have not a doubt of there being in this region three allied species of Argynnis. I have had before me a large number of Cybele, and of the No. 1, from many localities, and I have taken both myself in large numbers. The true Cybele is the common species of the Southern States and of New Jersey. In the vicinity of Newburgh, sixty miles north of New York, I find about as many of No. 1 as of Cybele. In the Catskill mountains, fifty miles north of Newburgh, I took during last summer only eight specimens of Cybele, while No. 1 was extremely abundant. From Connecticut and Massachusetts, from central New York and Canada West, all I have received have been No. 1.' In a long series of both species the differences are constant and the distinctions plain. Cybele is larger, duller fulvous, and the fulvous is

not uniform, being lighter towards the hind margin and darker next to the base. The under side of the hind wings of No. 1 is of a rich cinnamon-brown, and the space between the two outer rows of silver spots is always, so far as I have seen, encroached on by the cinnamon colour. In Cybele this space is unclouded and immaculate, and the basal colour is quite another shade of brown. The silvering of No. 1 is very decided on the costa and on the abdominal margin. Kirby's description of Aphrodite applies to No. 1. The figure in Westwood's 'British Butterflies' is that of No. 1, and so is the description. Gosse, in his 'Canadian Naturalist,' p. 229, 261, speaks of two species as common, and which he had at first confounded. I do not think that No. 2 is common in that part of Canada; I only took thirty specimens last summer, though I looked for it carefully. This was in the Catskill mountains, and the next locality from which we have it is among the Green mountains of Vermont, and then the White mountains of New Hampshire; so it seems to be a mountain species in this latitude.'

"A. Cybele is much more different from Aphrodite than the latter is from No. 1, and it seems to me that the three will be generally considered as forming only two species, though some entomologists will describe them as three species, and others will maintain that they are only three local varieties, and that No. 1 is the transition from Cybele to Aphrodite. All the specimens in the British Museum are Cybele and Aphrodite. I have placed No. 1 in the Museum for inspection; it was forwarded to me by letter, and is consequently much injured."

Mr. F. Moore exhibited a collection, contained in fourteen drawers, of Asiatic silk-producing moths, illustrated with specimens and figures of their several transformations, and samples of the various raw and manufactured silks. Mr. Moore also read a paper on those insects, in which he enumerated the whole of the Asiatic silk-producing moths known to him, with remarks on their habits, localities, cultivation, and the quality of the silk produced. He also gave the characters of a new genus (Caligula), and described a new species of Neoris (N. Huttoni, *Moore*).

On the Restoration of Obsolete Names.

The Secretary read a paper by Dr. H. Schaum, "On the Restoration of Obsolete Names in Entomology," in which the author assigned the reasons which induced him not to adopt the names of Stephens and Marsham for many Coleoptera which continental authors had not been able to identify, but which the researches of Mr. Waterhouse had shown to belong to species known on the Continent by names posterior in date to the English authors. Dr. Schaum contended that the law of priority of nomenclature was applicable, or at all events that a once-current name was to be dropped and an older one restored, only when the publication of the earlier name was accompanied by such a description of the insect as would give another entomologist a reasonable probability, or at least some possibility, of recognizing the species from the description. A description which did not come up to this standard was no description at all, and names accompanied only by such nondescript descriptions were in fact mere catalogue names, not entitled to priority.

Mr. Waterhouse, Prof. Westwood, Mr. Stainton, the Rev. Hamlet Clark and the President combatted the views of Dr. Schaum, and argued in favour of the law of priority of nomenclature as now received in this country. It seemed to be considered that Dr. Schaum's views were good in theory, but bad in practice; that it was impos-

sible to say where the line should be drawn between descriptions which did and those which did not entitle a name to priority; that what one entomologist would consider to be a good description, by another would be considered faulty and untrustworthy; that what in one age was a sufficient description became in a subsequent age insufficient, from the discovery of new species, and other reasons; that the consequence of a strict application of Dr. Schaum's rule would be the immediate abolition from our lists of all or most of the Linnean and Fabrician names; and lastly, that Dr. Schaum had in some degree shown the impracticability of his rule by himself not having acted up to it. In reference to some criticisms contained in the paper, on the descriptions in Stephens' works, and in Mr. Hope's paper on insects brought from Nepaul by Gen. Hardwick, in the 'Zoological Miscellany,' Prof. Westwood remarked that Dr. Schaum appeared to have forgotten that Stephens described his genera in two ways—*first*, a few words of description to each genus, pointing out the principal characters; *secondly*, a synoptical table of the genera in each family, wherein the most minute characters were noticed. As to Mr. Hope's descriptions, he might mention that the paper on Nepaulese insects, as published, was a mere abstract of what Mr. Hope wrote; he knew it to be a fact that when the paper was written it was, for some reason or other, inconvenient to give it at length in the 'Zoological Miscellany,' and the elaborate descriptions of Mr. Hope were cut down to the meagre half-dozens of words which had incurred the censure of Dr. Schaum.

A new Part of the 'Transactions,' Vol. i., 3rd series, Part I., was on the table, ready for distribution among the members and subscribers.

May 5, 1862.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—'Journal of the Proceedings of the Linnean Society of London,' Vol. vi. No. 22; presented by the Society. 'The Zoologist' for May; by the Editor. 'Sitzungsberichte der Königl. bayer. Akademie der Wissenschaften zu München;' by the Academy. 'Journal de la Société Entomologique Belge,' Tome v.; by the Society. 'The Intellectual Observer,' No. 4; by Messrs. Groombridge & Sons. 'The Journal of the Society of Arts' for April; by the Society. 'The London Review' for April; by the Editor. 'The Athenæum' for April; by the Editor. 'The Journal of Entomology,' No. 5; by the Proprietors.

Election of Members.

George Robert Gray, Esq., the Rev. T. H. Browne, and Alfred Haward, Esq., were balloted for and elected Members of the Society.

Vacancy in the Council.

The President announced that a vacancy had occurred in the Council by the resignation of Dr. Knaggs; that the Council recommended to the Society the name of Mr. Stainton for election to the vacant seat; and that the next ordinary Meeting of the Society would be a Special General Meeting, for the purpose of electing a new member of Council.

General Index to the Second Series of the 'Transactions.'

The President also announced that the General Index to the Second or New Series of the 'Transactions' was on the table, ready for gratuitous distribution among the Members and Subscribers who had paid Subscriptions for 1861.

Exhibitions.

Professor Westwood exhibited a box containing a number of illustrations of the economy and transformations of various species of insects, which had recently been presented to the Oxford Museum by Mr. S. Stone, of Brighthampton. Amongst these were specimens of Volucella pellucens (together with its eggs and pupæ), reared from the nest of the common wasp, on the larva of which the larva of the Volucella feeds, and on the outside of the nest of which the eggs are deposited. Also Anomalon Vesparum, *Curt.*, reared from the comb of wasps' nests: some of the insects did not appear till the end of three years, as stated at a previous Meeting of the Society by Mr. Stone. Also specimens of various galls and their makers, or the parasites by which the makers were destroyed: amongst these was a beautiful white cottony mass, found on the ground-ivy, from which a small adscitory ichneumon had been produced; also two Cecidomyia galls and their makers. Various illustrations of the nests of insects made in the pith of bramble and elder twigs were exhibited, with the insects reared from them, including several species of sawflies, three species of Crabronidæ, one Odynerus, together with species of Malachius, Dasytes and Anaspis. Two beautiful varieties of Acronycta Alni were also contained in the box—one taken at sugar, recorded in the 'Entomologist's Intelligencer' for 1856, and one bred on the 22nd of February, 1862, the larva having fed on whitethorn and alder.

The President said he had bred Anomalon Vesparum from Vespa rufa, but he understood that Mr. Stone's specimens were bred from Vespa vulgaris; and it thus appeared that the same parasite attacked two different species of wasp.

Referring to Mr. Newman's exhibition, at the April Meeting of the Society, of a pseudogynous specimen of Liparis dispar, Professor Westwood remarked that he thought Mr. Newman's statement, that the antennæ were those of a male, was not strictly accurate; the antennæ were in fact intermediate between those of the male and female. Neither was the specimen exhibited by Mr. Newman unique, for the Berlin Museum possessed a pseudogynous specimen of Liparis dispar, which had been described and figured some years ago by Dr. Klug, and the figure had since been reproduced in several works published in this country.

Mr. F. Moore exhibited the cocoon of a new species of silkworm from Japan, probably allied to Bombyx Paphia; the silk was of a delicate pale green colour.

Mr. Lubbock exhibited the preparatory state of Psocus; the whole body of the larva was covered with hairs having terminal bulbs, which retained the grains of sand

and other materials with which the creature came in contact, and this, coupled with its greenish colour, made it very difficult to distinguish from the trees on the bark of which it lived, and thus formed a protection from destruction. So completely was the body covered with these hairs that even the immediate neighbourhood of the eyes was not free from them; the consequence was that a quantity of foreign matter collected on and over the eye; and thus the singular result was attained, that an animal having very complicated eyes was at the same time provided with a complicated system to prevent it from seeing.

Mr. Pascoe stated that the Centorhyncus biguttatus, *Schön. Gen. et Spec. Curcul.* viii. pars 2da, p. 158, was identical with the C. raphaelensis, *Chev.*

Reverting to the subject of "dimorphism" discussed at the previous Meeting, Mr. Pascoe said that, in the opinion of Mr. Bates, neuter ants were only dimorphous females. Mr. Baly thought that every species of Sagra had a dimorphous male. The President said that he had in some cases found two forms of worker ants, which would make four forms instead of three. Mr. Lubbock would be glad to know precisely what was meant by dimorphism: no one denied that in certain orders of insects there were developed females and undeveloped females, or neuters or workers: was "dimorphism" anything more than a new name applied to an old-established fact?

Mr. Stevens exhibited a new species of Eudicella from Ovampo Land (South-Western Africa), and the nest of a trap-door spider (Actinopus) from Affghanistan.

Sir John Hearsey exhibited a collection of Noctuidæ and other Lepidoptera from India, and remarked upon the apparent identity of some of them with British species. Amongst them were specimens of Deiopeia pulchella, exactly similar to British specimens. Sir John said that that species was common in India: he remembered introducing from England the seeds of a plant never before taken to India; as soon as the plants grew up they were attacked by the larva of this moth, and he bred (he thought) as many as 500 specimens of the perfect insect.

Mr. Waterhouse exhibited a series of the British species of the genus Tychius, in illustration of the paper mentioned below.

Papers read.

Mr. Lubbock read a paper "On the Larva and Pupa of Lonchoptera." It contained an elaborate description of the Dipterous larva of which Mr. Lubbock had exhibited a drawing at the February Meeting of the Society. Since that time he had obtained more specimens of the larva and the pupa, which also was minutely described. From two of the pupæ there had emerged two specimens of a species of Lonchoptera, probably L. lutea.

With reference to the description of the pupa, Prof. Westwood remarked that he could not understand a Dipterous pupa without traces of the limbs lying on the breast. Mr. Lubbock's observations were full of interest, and he trusted they would be continued.

Mr. Waterhouse read "Descriptions of the British Species of the Genus Tychius." The number of species described was eleven, being two more than were enumerated in Mr. Walton's Catalogue; of these two, one had, by British Coleopterists, been confounded with T. Schneideri, and the other (T. brevicornis of the paper) was apparently undescribed. A brief abstract of the characters of the less clearly distinguished species was thus furnished by the author:—

1. *T. hæmatocephalus*, Schönh. Of this insect only two supposed British specimens appear to be known—one in Kirby's collection, which was received from Mr. Spence; the other in the collection of Mr. Wollaston, to whom it was given, with other small Coleoptera, as having been taken in the Isle of Wight.

2. *T. 5-punctatus*, Linn.

3. *T. polylineatus*, Germ., Schönh. This insect is also described by Schönherr, in his 'Supplement' (vol. vii. p. 311), as T. lineatulus, *Kirby*, from English specimens sent by Mr. Walton; but the somewhat obtuse tooth of the hinder femora is overlooked, and I have no doubt that T. lineatulus and T. polylineatus will be found identical. With regard to the name lineatulus, as applied to different species of Tychius, there is evidently great confusion. The following abstract from my notes I think will be found correct:—

T. lineatulus of Schönh. (not of Kirby) = T. polylineatus, *Germ.*, *Schönh.*

T. lineatulus of Kirby's MSS. and collection = T. Schneideri, *Schönh.*

T. lineatulus of Stephens' 'Illustrations' = T. Schneideri (part) and Miccotrogus picirostris (part).

T. lineatulus of Stephens' collection = T. polylineatus (part) and Miccotrogus picirostris (part).

T. lineatulus of Germar = T. nigrirostris of Walton's Catalogue, and perhaps also the T. tibialis, *Schönh.*

The T. polylineatus of Schönh., in our collections, is generally, if not always, labelled "Schneideri," and is sometimes mixed with the true T. Schneideri. The name lineatulus is given as synonymous with Schneideri both in Walton's Catalogue and that of Dr. Schaum.

4. *T. venustus*, Fab.

5. *T. Kirbii* (T. flavicollis, *var. β.*, *Schönh.*; T. flavicollis, *Walton*, in the British Museum Collection, not of Kirby or Stephens). Oblong-ovate, pitchy, densely clothed with broad ochraceous scales, those on the under parts and on the suture of the elytra whitish; rostrum, antennæ and legs testaceous; thorax rounded and contracted in front, the sides behind the middle line very nearly straight and parallel; elytra ample, with the humeral angles somewhat prominent, distinctly striated as seen denuded of the scales, and of a rufous colour, excepting at the base; rostrum long, nearly straight and cylindrical; posterior femora dentate in both sexes. Considerably smaller than T. venustus, which it most nearly approaches in form, and distinctly larger than either of the following species.

The above species all have some at least of the femora dentate: the following species have unarmed femora.

6. *T. junceus*, Germ., Schönh. Oblong-ovate, pitchy (the elytra posteriorly more or less red), densely clothed with elongate yellowish scales; rostrum distinctly arched, gradually attenuated from the base to the point of insertion of the antennæ, then rather more distinctly attenuated and somewhat pointed, especially in the males; antennæ, legs and the greater part of the rostrum testaceous; thorax with the sides distinctly rounded; elytra striato-punctate. General form shorter and more inclined to ovate than the following species. Schönherr's description of T. flavicollis, as it appears to me, belongs almost entirely to this species.

7. *T. tomentosus*, Germ., Schönh. Oblong, pitchy black (the apex of the elytra more or less rufescent), above clothed pretty densely with elongate pale yellowish scales, with filiform scales on the striæ of the elytra, and a few broad white scales on

the suture; rostrum stout, very little bent, and of very nearly uniform width throughout; the apex only rufescent; sides of the thorax very little rounded; elytra distinctly striated; antennæ and legs testaceous; the femora more or less clouded with dusky, rarely entirely dark. More elongate than the preceding species, and is readily distinguished by its rostrum being stouter (the greater part dark coloured), less bent and having the apex not attenuated. The scales on the elytra are, moreover, of three distinct forms, whereas in T. junceus there is scarcely a perceptible difference in any of the scales. In the preceding species the anterior tibiæ are unarmed in either sex: in the following four species the anterior tibiæ of the males have a tooth or spine on the middle of the inner side.

8. *T. Schneideri* (Herbst), Schönh. Oblong, rather broad and but moderately convex; pitchy black; above pretty densely clothed with piliform, and for the most part ash-coloured scales, with broader white scales along the middle of the thorax, most abundant behind, and with broad snow-white scales on the suture of the elytra; antennæ at the base, tibiæ and tarsi ferruginous; rostrum thickish, bent and cylindrical; femora but little incrassated. The alternate interstices of the striæ of the elytra are often paler (sometimes whitish) than the others. The tooth on the anterior tibiæ of the male is but little prominent, smaller, shorter and less convex than in T. polylineatus; general hue darker, being of a plumbeous gray; the scales much narrower, and furthermore distinguished by the unarmed femora and by the toothed anterior tibiæ of the male.

9. *T. Meliloti* (Kirby), Stephens, Germar, Schönh., Walton. Oblong, pitchy black (the apex of the elytra often rufescent), above clothed with yellowish elongated scales; rostrum arched, attenuated, and the part anterior to the antennæ somewhat depressed; antennæ, tibiæ and tarsi, as well as the apex of the rostrum testaceous; thorax constricted in front; the sides nearly parallel; elytra distinctly striated, and with the humeral angles rather prominent; legs, comparatively, rather slender; the anterior tibiæ with an acute tooth on the inner side, in the male sex. About equal in size to T. tomentosus and Miccotrogus picirostris, but a little broader than the last-mentioned insect.

10. *T. nigrirostris*, Walton Catal. (*T. tibialis*, Schönh.?). Oblong, black, rather sparingly clothed with subpiliform ashy white scales; the scape and first joint of the funiculus of the antennæ, the tarsi and apical portion of the tibiæ rufo-testaceous; rostrum rather slender, linear and but little arched; elytra distinctly striated. Male with an acute tooth on the inner side of the anterior tibiæ. Of the very narrow scales on the elytra of the insect there are usually but two rows on the interstices of the striæ, and viewed under an ordinary lens the elytra appear to have whitish striæ; on the striæ themselves is a single row of still more slender scales; the posterior margin of the thorax is edged with broader white scales, and similar scales are scattered along the suture. In size, form and general appearance extremely like Miccotrogus picirostris. Schönherr's description of T. tibialis agrees very closely with this insect, but no mention is made of the dentate tibiæ of the male; possibly he only possessed the female.

11. *T. brevicornis* (N. SP.). Minute; oblong, black, rather sparingly clothed with very narrow scales as in the preceding species; the base of the antennæ (including the scape and two of the joints of the funiculus), the tibiæ and tarsi rufo-testaceous; the third joint of the funiculus slightly transverse, the others gradually broader, though scarcely longer, the last joints very strongly transverse. Anterior tibiæ (in the male?)

with an obtuse tooth on the inner side. About half the bulk of the medium-sized specimens of Tychius picirostris. Most closely resembles the preceding species, from which it can scarcely be said to differ, excepting in its very small size, and the comparatively short antennæ; the scape is relatively shorter and more clavate; and the separate joints of the funiculus are decidedly shorter when corresponding joints are compared. I have seen but three specimens of this insect; one specimen I found at Hawkhurst, in Kent, in the month of April, 1860; a second I took at Gravesend, in the following year, in the month of May; and the third is in Mr. S. Stevens' collection: they all have an obtuse tooth on the inner side of the anterior tibiæ.

June 2, 1862.

Frederick Smith, Esq., President, in the chair.

Election of Member of Council.

The Secretary read the notice summoning the members to a Special General Meeting, for the purpose of electing a member of Council in the place of Dr. Knaggs, resigned; and the Meeting having been made a Special General Meeting, the President appointed Messrs. Baly and Wilkinson to act as Scrutineers; a ballot was taken, and H. T. Stainton, Esq., was unanimously elected a member of the Council of the Society.

Election of Members.

The Meeting having resumed as an Ordinary Meeting, W. H. L. Walcott, Esq., and David Sharp, Esq., were severally ballotted for and elected Members of the Society.

Donations.

The following donations were announced, and thanks ordered to be given to the donors: — 'Memoir of the Rev. John Stevens Henslow, M.A., F.L.S., F.G.S., F.C.P.S., late Rector of Hitcham, and Professor of Botany in the University of Cambridge,' by the Rev. Leonard Jenyns, M.A., F.L.S., F.G.S., F.C.P.S.; presented by the Author. 'Schriften der Königlichen Physikalisch-ökonomischen Gesellschaft zu Königsberg, Zweiter Jahrgang, 1861, Erste und Zweite Abtheilung'; by the Society. 'The Canadian Naturalist and Geologist, and Proceedings of the Natural-History Society of Montreal, conducted by a Committee of the Natural-History Society,' Vol. vii. No. 2; by the Society. 'The Zoologist' for June; by the Editor. 'The Journal of the Society of Arts' for May; by the Society. 'The London Review' for May; by the Editor. 'Journal of the Proceedings of the Linnean Society,' Vol. vi. No. 23; by the Society.

The addition to the Library, by purchase, of Jacquelin Du Val's 'Genera des Coléoptères d'Europe' was also announced.

Exhibitions, &c.

The Secretary read a letter addressed to him by Charles Barton, Esq., of Rope Hill, Lymington, requesting an explanation of a phenomenon he had observed in his garden on the 21st ult.: the leaves of all the shrubs and plants were covered with dust, which, with a half-inch object-glass, was found to consist of globules of one size, like small pearl-barley; with a quarter-inch object-glass these globules resembled the ova of fish, but were not perfectly globular, being indented on one side. Some laurel leaves, having some of the globular masses upon them, were exhibited to the meeting. It was suggested by Mr. Saunders that most probably the dust consisted of the pollen of some coniferous tree.

Prof. Westwood exhibited a dry collodion plate, on the coating of which—consisting of gelatine, collodion, nitrate of silver and tannin—considerable devastation had been committed by Blatta orientalis; and in reference thereto read the following extract from a letter addressed by W. G. Ormerod, Esq., of Chagford, to Mr. Spence Bate:—"The enclosed may possibly interest you as an entomologist, one of the 'ologies' that I have not dabbled with. I find that the black beetles are particularly fond of dry collodion plates, in the progress from wet to dry, when reared in a box in a dark cupboard. Several had suffered before I found out the cause. At last I caught one black beetle in the act. The animal seems to have been particularly fond of the thick collodion, by the way he has cleared it off at the corner: the alternate action of the mandibles seems very clear."

Prof. Westwood remarked that this was not the first instance he had known of insects exhibiting a partiality for chemical substances, and mentioned the case of a species of Ptinus which was found at Knightsbridge, in great numbers, congregated in a bottle full of chemical solution.

Mr. Waterhouse exhibited specimens of Scraptia nigricans, *Ste.*, bred from rotten oak wood, in the neighbourhood of London; and of Trichonyx sulcicollis, one of the Pselaphidæ, taken also in the vicinity of London, by Messrs. Douglas and Scott.

The President exhibited six specimens of Pentarthrum Huttoni, *Woll.*, taken by Mr. Reading in the Plymouth district; and read the following extract from a letter received from Mr. Reading:—

"The history of the enclosed specimens is simply this:—I purchased some material used in gardening operations, amongst which was a cask of light construction, made of birch with hazel hoops, in the stems and hoops of which this insect was found. The cask had been stowed away in an out-house, with various kinds of wood used for burning. There were but four examples of this insect known to Science previous to the capture of these, and they, too, were taken in Devonshire; so that this insect is purely Devonian. It was described by Mr. Wollaston in the 'Annals and Magazine of Natural History' for August, 1854, to which I beg to refer all those who feel interested in the history of the species. After you have shown the specimens to the Meeting, will you be pleased to present a pair of them to the Entomological Society, also a pair to the British Museum, and a pair to the collection of the Entomological Club."

Mr. W. F. Kirby exhibited a specimen (the second) of Brahmæa Hearseyi, *White.* Mr. White exhibited it at the Zoological Society a few months ago, and said that it confirmed the characters by which he had separated the species from the Certhia, *Fab.*: it was found in a collection of insects received direct from India.

Mr. Kirby also exhibited a magnificent female specimen of Parnassius Clarius, a rare species inhabiting various chains of mountains in Asiatic Russia, and coming nearer to P. Nordmanni than to any other European species.

Prof. Westwood said that at the close of the Exhibition of 1851 he had drawn up and read a report of the insect products exhibited: he had not yet had an opportunity of going fully through the present International Exhibition, but he thought it might be agreeable to the members of the Society if he pointed out what of an entomological nature had already attracted his attention. Of the collections from foreign countries, he might mention those from Canada and South Australia, the latter, however, not very good; and a collection of insects of all orders from Guiana, the most remarkable of which was a species of Paussus, probably a new genus, but unfortunately the antennæ were broken, so that it was impossible to say whether they were 10- or 8-jointed. Of the exhibitions of an economical kind, the best was one in the North Gallery of the French compartment, which had been formed by monks for educational purposes; there were also among the French exhibitions some magnificent Lepidoptera, including the silk-producing species of Bombyx, of which Mr. Moore had exhibited the cocoon at the last Meeting of the Society. The silk products from India were very well and fully represented. Among the South-Australian collection was a magnificent Astacus in spirits, as large as a good-sized lobster, and with its body covered with spines. Prof. Westwood thought that the bee products were not so well represented as in 1851.

Mr. W. W. Saunders, in addition to the objects of attraction mentioned by Prof. Westwood, directed the attention of members to the Brazilian collection, and also to the exhibition of the ravages of a species of Botys, which was peculiarly destructive to hemp.

The President exhibited specimens and magnified drawings of Myrmecocystus mexicanus, and read the following notes thereon:—

"I have this evening an opportunity of exhibiting specimens of a very remarkable ant from Mexico—the Myrmecocystus mexicanus of Wesmael, described in the fifth volume of 'Bulletins de l'Academie de Bruxelles,' 1838. The workers of this singular ant are of two very distinct forms, one being of the ordinary description, like our wood ant (*Formica rufa*), active, and performing the necessary duties in the formicarium; the other, which is the larger worker, is inactive, and does not quit the nest, their sole purpose apparently being to elaborate a kind of honey, which they are said to discharge into prepared receptacles; this constitutes the food of the entire population of the community. In the honey-secreting workers the abdomen is distended into a large globose bladder-like form, much too large for the creatures to drag about with them; the head, thorax, and basal segment of the abdomen are extremely like the Formica sanguinea. The male and female I have not seen, but they are described as resembling the same sexes of most of our common European ants. The specimens that I now exhibit were sent to me by Dr. Pagenstecher, of Heidelberg: from him I learned that the ants—that is, the honey-secreting individuals—are collected and regularly sold in the markets in Mexico, and that from the honey which is expressed from them a very agreeable liquor or drink is manufactured. In Mexico the ant is called Hormigas miêleras, or moihileras, that is, honey ants, or pouched ants.

"It will perhaps be in the recollection of members of the Society that I described, in the second volume of the 'Proceedings of the Linnean Society,' a species of ant which I named Crematogaster inflatus, from the fact of its having a remarkable

bladder-like receptacle on the hinder part of the thorax: this receptacle is furnished with a minute aperture at the posterior part on each side; on opening one of these bladders it was found to contain a crystallized mass, which to the taste resembled sugar. This ant was from Singapore and Borneo. I consider this a more remarkable insect than the Myrmecocystus mexicanus. Many insects are known to elaborate honey or sweet fluids, the Aphides for instance; but in all previous cases the abdomen has formed the receptacle, whereas in Crematogaster inflatus it is situated on the metathorax."

The Secretary read, on behalf of Mr. Newman, the following paper, entitled

Varieties versus *Hybrids*.

"At the March Meeting of the Society, Mr. Fereday read a paper of extreme interest, on variation in the coloration or ornamentation of certain Lepidoptera which he exhibited, and argued that the discrepancy between the specimens in question, and the insect in its normal or typical phase, probably resulted from the male and female being referable to different species, although we all know that it is generally assumed that the male and female progenitors of a moth are invariably of the same species. To such an assumption Mr. Fereday objects that 'we ought not to accept as a fact anything which *may be*,' but *is not*, established by direct and conclusive evidence.' Without attempting to deny the *primâ facie* value of this axiom, I may perhaps be allowed to state that we accept, on theoretical grounds only, many conclusions that are not susceptible of proof by direct evidence; and that we shall continue to do so as long as such minds as those of Galileo, Newton and Cuvier are from time to time permitted to enlighten us; indeed, unless we theorize on very slender knowledge, we shall remain in utter ignorance of much that now passes for sound philosophy. Mr. Fereday proceeds further to support his idea of hybridism by objecting to our forming any conclusions about parentage without positive evidence. These are his expressions: — 'To prove that the so-called "varieties" are varieties and not hybrids, I contend that it is not sufficient to prove their descent from a particular female, but that there must be evidence of the male parent having been an insect of a precisely similar type to that of the female parent; because, if the male varied from the female, the very question upon which I raise an issue is again involved.' I do not object that Mr. Fereday should lay the *onus probandi* on those who adopt an opposite theory; but if this be fair and logical, then a moment's reflection will convince any one that the converse is equally fair and logical, and that the *onus probandi* may also be laid fairly and logically on the advocates of the hybrid hypothesis: for the sake of example:—'To prove that the so-called "hybrids" are hybrids, I contend that it is not sufficient to prove their descent from a particular female, but there must be evidence of the male parent having been an insect of a species totally distinct from the female parent, &c.' I will further illustrate this: let Mr. Fereday fix on an abnormal specimen of Arctia caja, Abraxas grossulariata, or any other, I care not what species, so that it be liable to great variation, and its maternal parentage known,—say a drab caja or a white grossulariata,—and then let him find a papa for it in some other species; it matters not whether totally discordant or closely allied; thus were he to discover that one of the quakers, as Moses Harris prettily called the Tæniocampæ, had been too familiar with the lady tiger, more properly tigress, and that her tell-tale little ones had thus been suffused with drab, or had he detected a Pontia Rapæ male, or even a Scoria dealbata

male, paying delicate attentions to Abraxas grossulariata female, we could perhaps believe that those nuptially-adorned specimens of the last-named insect resulted from illicit intercourse; but surely we who believe in varieties, and who call them varieties, are rather hardly treated when we are told that *we* must prove that these—what shall I call them? — these eccentricities of genius do *not* exist. I wish Mr. Fereday to show that they *do* exist. I am quite sure that if I thought so I should try to prove it, and not lay on the shoulders of another the onus of proving a negative. In our domestic animals (the horse, ox, rabbit, guinea pig, dog, cat, &c.) the coloration or ornamentation varies quite as much as in the tiger or currant moth, and exactly in the same way, that is, in the excess or absence of some particular colour, as black, yellow or white; yet we suspect no hybridism, for in every instance the male parent is known to be specifically the same as the female. Indeed, varieties are scarcely subject to our control at all; for, whatever Mr. Gregson, who may be called the victuals-doctor, may say to the contrary, I don't think he could produce a stock of red Herefordshire cattle out of black Highland stots, were he to feed them for generations on carrots; neither can I believe that the hybrid theory will ever be established by actual experiment. Those who see one tortoiseshell in a litter of tabbies, or one self-coloured example reared from a batch of tiger's eggs, need not, as I conceive, trouble themselves to detect improprieties on the part of the mother, or assume the consumption of unusual or unwholesome food by either parent or offspring. Varieties will occur; and should we seek an explanation of them, we must investigate the subject with much greater care than we have hitherto done."

Mr. Waterhouse read a paper entitled "Observations upon the Nomenclature adopted in the recently-published 'Catalogue of British Coleoptera,' having reference more especially to remarks contained in Dr. Schaum's paper 'On the Restoration of Obsolete Names in Entomology.'"

Mr. W. F. Kirby read a paper "On the Specific Distinctions of Colias Boothii and Hecla," and the following description of Cœnonympha Mandane:—

"During the extensive examination I have had to make lately of the collection of Rhopalocera in the British Museum, I have met with two specimens of a Cœnonympha which appears to me to be new. I therefore describe it under the name of

Cœnonympha Mandane, *n. sp.*

Alis anticis fulvis obscurioribus; posticis fuscescentibus, subtus lineâ argenteâ; fimbriis omnibus aurantiacis.

This species expands an inch and three or four lines. Fore wings dull fulvous or tawny, shading off into brown towards the hind margins; hind wings brown, with a few small marginal orange eyes in one specimen. A narrow orange line close to the fringe on all the wings. Fringes ashy gray. Under side of the fore wings uniform dull fulvous; hind margin ashy gray, the orange line fading into it towards the tip. Under side of the hind wings brown, greenish at the base; the orange fringe edged internally by a silvery line, within which are three or four small eyes with silvery pupils. In the centre of the wing the pale band usual in the genus Cœnonympha is represented by two large spots. Nearer the base, on the costa, is another small eye with a silvery pupil.

Habitat, Polish Ukraine."

Mr. W. Wilson Saunders said the President and Council of the Society had accepted an invitation to spend the day with him in the neighbourhood of Reigate on the 8th of July, and invited every member and subscriber to meet the President and Council on that occasion.

A new Part of the 'Transactions,' Vol. i., 3rd series, Part II., was on the table.

July 7, 1862.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors: — 'Horæ Societatis Entomologicæ Rossicæ variis Sermonibus in Rossia usitatis editæ,' Fasciculus primus; presented by the Entomological Society of Russia. 'Tijdschrift voor Entomologie,' Vol. iv., Parts V. and VI.; Vol. v., Parts I., II. and III.; by the Entomological Society of the Netherlands. 'Memorias de la Real Academia de Ciencias de Madrid,' Tom. iii., iv., v. 'Resumen de las Actas de la Real Academia de Ciencias de Madrid,' 1852—1859; by the Academy. 'Verhandlungen der Kaiserlich-Königlichen zoologisch-botanischen Gesellschaft in Wien,' Vol. xi., Parts I., II., III. and IV. 'Nachträge zu Maly's Enumeratio plantarum phanerogamicarum imperii Austriaci universi, von August Neilreich, herausgegeben von der K. K. zoologisch-botanischen Gesellschaft in Wien;' by the Zoological-Botanical Society of Vienna. 'Der Aufenthalt auf Manila während der Weltreise der K. K. Fregatte Novara,' von G. Ritter v. Frauenfeld; 'Ueber die sogenannte Sägspän-See beobachtet während der Weltreise der Novara,' von G. Ritter v. Frauenfeld; 'Eine für Oesterreich neue Trypeta,' von G. Ritter v. Frauenfeld; 'Beitrag zur Kenntniss der Insekten-Metamorphose aus dem Jahre 1860,' von G. Ritter v. Frauenfeld; 'Dritter Beitrag zur Fauna Dalmatiens, nebst einer Ornithologischen Notiz,' von G. Ritter v. Frauenfeld; 'Weiterer Beitrag zur Fauna Dalmatiens,' von G. Ritter v. Frauenfeld; by the Author. 'Sitzungsberichte der Königl. bayer. Akad. der Wissenschaften zu München, 1861,' ii. Heft III.; by the Academy. 'Monographia Cassididarum, auctore Carolo H. Boheman,' tom. quartus, Supplementum; by the Author. 'The Natural History of the Tineina,' Vol. vii. (Bucculatrix and Nepticula), by H. T. Stainton, assisted by Prof. Zeller, J. W. Douglas and Prof. Frey; by H. T. Stainton, Esq. 'A Treatise on some of the Insects injurious to Vegetation,' by Thaddeus William Harris, M.D., third edition; by the Boston Society of Natural History. 'Proceedings of the Royal Society,' Vol. xii. No. 49; by the Society. 'The Intellectual Observer,' Nos. 5 and 6; by Messrs. Groombridge & Sons. 'Exotic Butterflies,' Part XLIII.; by W. Wilson Saunders, Esq. 'The Zoologist' for July; by the Editor. 'The Athenæum' for May and June; by the Editor. 'The London Review' for June; by the Editor. 'The Journal of the Society of Arts' for June; by the Society.

Exhibitions.

The President exhibited a box of galls, which had been forwarded to him from Germany, together with the makers of many of them, named in accordance with the nomenclature adopted in Hartig's work on gall insects. One of the species was Cynips Kollari, hitherto erroneously called in this country C. lignicola. Of this species the President remarked that about three years ago it appeared in the woods near London, especially on the north side, in very large numbers; but in the second year of its appearance the tomtits had discovered that each gall contained a fine fat grub, and the result was that it was now difficult to obtain a perfect gall. Mr. Walker corroborated Mr. Smith's account both of the appearance and the approximate extermination of the species in the woods near Highgate; and Prof. Westwood expressed a hope that the fact would be made known as widely as possible, since it afforded an additional argument to the many already produced in opposition to the indiscriminate slaughter of small birds.

Prof. Westwood exhibited specimens of Acarus domesticus, *DeG.* (A. Siro, *Linn.*), found by Dr. Maddox, of Woolston, Southampton, in a nitrate of silver bath prepared for photographic purposes; and suggested that Mr. Andrew Crosse's wonderful creation of Acari might probably be explained on the hypothesis that, in that case as in this, the insects had been attracted by some of the chemical ingredients employed. He also exhibited some photographs of insects sent to him by Mr. Dale, the execution of which was so good that, notwithstanding a certain haziness, the specific distinctions of even small species were recognizable: many of the insects photographed were gummed on card, which spoiled the effect; but when they were pinned high, and had the wings flat and horizontal, the result was so successful that the Professor thought that for large insects, and especially for Neuroptera, photography might well be employed for the publication of figures; but that for smaller species it would perhaps only be useful in taking representations, from which the draftsman might afterwards make magnified drawings.

Prof. Westwood also exhibited a continuation of the series of illustrations of the economy and transformations of insects, presented to the new Museum of Oxford by S. Stone, Esq., of Brighthampton, near Witney. Amongst them were specimens of the preparatory and perfect states of several species of dragon flies; the cocoons and perfect states of Trichiosoma Lucorum and its parasites (two species of Ichneumonidæ), and Prof. W. stated that many years ago he had reared a perfect imago of this Trichiosoma from a cocoon which also contained within it a few cocoons of a small ichneumon, which had consequently not succeeded in killing the Trichiosoma larva. Also several other small species of Tenthredinidæ and Crabronidæ, reared from bramble twigs, the pith of which had been bored into by the larvæ of the former, and by the parent wasps of the latter; also several species of galls and other insects, and various leaf-mining insects of different orders, including a species of Orchestes; also the cocoon and imago of a species of Hemerobius, and the pupa-skin and imago of a Raphidia, the pupa having been found in a burrow in the pith of a twig, where probably it had fed upon the larva by which the burrow had been made. Mr. Stone had also forwarded a large number of illustrations of the operations of leaf-mining insects of different kinds; and Prof. Westwood added that he had also received from Mr. Varney a series of specimens, carefully prepared, of leaves of a great number of garden plants of different kinds, which had been attacked by the leaf-cutter bee.

Mr. Stainton exhibited two species of Micropteryx, both bred by Mr. Wilkinson, of Scarborough; M. Salopiella from birch, and M. subpurpurella from oak. Mr. Wilkinson had unfortunately not observed the pupa, and was consequently unable to corroborate or add to the description given by Mr. Stainton at a former Meeting.

Mr. Pascoe read the following

Note on Stenidea, Muls., *and Blabinotus*, Woll.

"In the last number of our 'Transactions' (Vol. i. third series, p. 178) Mr. Wollaston, following Mr. Thomson, who has also been followed by Dr. Schaum, in his new 'Catalogue,' makes the genus Stenidea, *Muls.*, synonymous with Blabinotus of the first-named author. This is an error which I pointed out some time ago to Mr. Thomson, and I am only surprised that Mr. Wollaston did not see that a Longicorn genus, with a porrect head and securiform palpi, could have nothing to do with the Saperdides. Stenidea is very close to Pogonocherus among the Lamiidæ, where Mulsant originally placed it. Blabinotus is a Callidium form, belonging therefore to the Cerambycidæ, and was placed by Mr. Wollaston, in his 'Insecta Maderensia,' immediately after Phymatodes, which is about its correct position. I scarcely know, however, how the genus is to be distinguished from Oxypleurus, except it be by its smaller and less emarginate eyes. I may add that Mr. Janson, at my request, has kindly examined the two genera, and he is satisfied that they are perfectly distinct. The name Stenidea* is stated to have been preoccupied: there is a Stenidia certainly among the Carabidæ, and if this be the one alluded to I think the objection is invalid, as they are not identical, however near they may be in sound. In any case, if there is to be a new name, that of Ataxia of Haldeman must be adopted, an American species described by that author being referable, according to Lecomte, to Mulsant's Stenidea."

Papers read.

Mr. Walker read a paper entitled "Notes on Chalcidites, with Characters of undescribed Species."

The Secretary read, on behalf of the author, a paper by Mr. R. Trimen, entitled "On some new Species of South-African Butterflies collected in British Kaffraria, by W. S. M. D'Urban, Esq., during 1860—61." In this paper eleven new species of Rhopalocera were described, including one the type of a new genus, named by the author D'Urbania, and placed by him (notwithstanding its apparent resemblance to the Satyridæ) among the Lycænidæ.

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* Dr. Schaum, in the second edition of his 'Catalogue,' writes *Stenidia;* in the first it is *Stenidea*, as Mulsant wrote it.

August 4, 1862.

Frederick Smith, Esq., President, in the chair.

On the motion of the Rev. Hamlet Clark, seconded by Prof. Westwood, it was unanimously resolved, "That the thanks of the Society be tendered to W. Wilson Saunders, Esq., for his constant liberality towards the Society, and in particular for the hospitality exhibited by him on the occasion of the Society's visit to Reigate on the 8th ult."

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors: — 'Proceedings of the Royal Society,' Vol. xii. No. 50; presented by the Society. 'The Zoologist' for August; by the Editor. 'The Intellectual Observer' for August; by the Publishers, Messrs. Groombridge & Sons. 'Saggio di Ditterologia Messicana di Luigi Bellardi, Professore di Storia Naturale,' Parte II., ed Appendice; by the Author. 'Journal of the Society of Arts' for July; by the Society. 'The London Review' for July; by the Editor. 'The Athenæum' for July; by the Editor. 'On the opportunities of advancing Science enjoyed by the Mercantile Marine,' by Cuthbert Collingwood, M.B., F.L.S., &c.; by the Author. 'Stettiner Entomologische Zeitung,' 1862, Nos. 4—6; by the Entomological Society of Stettin.

Exhibitions, &c.

Mr. Stevens exhibited a magnificent collection of Coleoptera, made by the late M. Mouhot among the mountains of Lao, in the interior of Cochin-China; it included some splendid Buprestidæ, about 150 species of Longicorns, &c., and a very large number of novelties. He regretted to have to state that M. Mouhot's exertions in the cause of Science had brought on a fever which resulted in his death.

Mr. Stainton exhibited specimens of Gracilaria semifascia, bred from maple-leaves obtained near Mickleham, on which the larvæ raised small, blunt, conical excrescences. Mr. Stainton having remarked upon the tendency of this insect to produce verdigris on the pin, the President suggested the use of a pin dipped into varnish, and allowed to dry before it was used.

Mr. Wallace exhibited photographic figures of Coleoptera: plates of Lucani, of the natural size, were conspicuously successful; other insects of smaller size, but magnified twice in linear dimensions, were not so successful. Mr. Wallace called attention to the mode of mounting these smaller species on pieces of gelatine instead of cardboard: this rendered the use of gum unnecessary, since all that was requisite to fix the insect was to moisten the under side; moreover, the gelatine was so transparent that the under side of the insect was available for examination.

The President exhibited two rare Staphylinidæ, — Myrmedonia Haworthii and Heliobates propinqua, — both captured by his son, Mr. Edward Smith, on Reigate Common, on the occasion of the Society's excursion on the 8th ultimo.

The President also exhibited an imperfect hermaphrodite of Apis mellifica, which had been sent from Scotland, and read the following description thereof:—

"Size and general appearance of the insect that of a worker. Head male; the eyes large, and meeting on the vertex; both the antennæ female, 12-jointed. Mandibles worker, not toothed at the apex as in both male and female. Wing on the right side, male; that on the left, worker. Legs male, or rather, partly male on the right side; the anterior and intermediate legs perfect male; the posterior leg male, but fringed with hair, and the basal joint of the tarsus male exteriorly, that is, smooth and convex, but within transversely ridged and clothed with hair; the following joints male; the left posterior leg is perfect worker. The abdomen furnished with a sting; the sting female, straight."

Prof. Westwood said that during June last he had noticed a couple of hive-bees near the mouth of the hive, apparently fighting; and on capturing them he found that one, which seemed to have been attacked by the other, had attached to its head a tuft of filamentous matter, which turned out to be composed of the pollen-matter of Orchis maculata. The Professor was desirous of sending the specimen to Mr. Darwin, as bearing on the subject treated in the most recent of that gentleman's works, but unfortunately it had been placed in spirit, by which the tuft of pollen-matter had been dissolved.

The Secretary read, on behalf of Dr. Alexander Wallace, the following

Note on the Ravages of the (Currant) Sawfly.

"In the 'Zoologist' for July, 1862 (Zool. 8079), an interesting account is given of the sawfly, Nematus ventricosus, *Klug*, translated from the Dutch of M. Snellen van Vollenhoven, by J. W. May, Esq. This insect is familiarly known by the name of the 'gooseberry grub,' whose ravages this year, extending all over the kingdom, have deprived us of many tons of fruit. By studying the natural history of this and other insects, we shall doubtless find a clue to the prevention of their ravages, and I wish now to throw out some hints which may prove useful for that purpose. After giving a description of the larvæ, &c., our author goes on to state, 'They feed both day and night, and, beginning in company on a leaf, they eat on until there is nothing left but the stalk and some of the thickest veins. Before quitting the bush they moult, once more assuming a pale yellowish green colour, the first and terminal segments being orange; but they are now without the black spots and hairs which they had in their earlier state. After this they drop from the tree, and construct a cocoon at the foot: this cocoon is made at no great depth in the ground, and is externally covered with little grains of earth. They assume the pupa state, in the summer, in the space of three weeks, in the winter only after an interval of eight months. The pupæ are yellowish white, and display all the parts of the imago. They very soon change their colour, and in eight or ten days, having moulted for the last time, the perfect insect gnaws open the cocoon and escapes.' Our author then gives a description of the perfect insect, and further adds, 'There was an incredible number of these larvæ in 1860. From observations made at Utrecht and at Leyden, there seems no doubt that the first brood in May attacked exclusively the leaves of the gooseberry, some of the bushes being quite stripped; and that the second generation, appearing in July, principally confined itself to the currant, but small numbers having been seen on the gooseberry. I observed this myself in a garden where the two plants were growing intermixed. Both larvæ and imagos were decidedly of but one species.' The truth of this latter observation, that the larvæ attack both gooseberry and currant

trees (the former at an earlier period of the year), is quite borne out by my own observation this summer. The second brood having now just made their appearance, I will detail a mode by which their ravages may be greatly lessened.

"The eggs—white, elliptical—are laid on the under surface, along the ribs of the leaf, to the number sometimes of 120 on a single leaf; the larvæ, when hatched, during the first twenty-four hours, make each one a little round hole. The leaf then presents the appearance of having been riddled by No. 7 shot. The second day the holes are larger, less regular, and soon coalescing; the larger veins only at the tip of the leaf remain undemolished. This is the critical time to destroy the brood. By gathering these leaves daily as the caterpillars are hatched (for they keep coming out during a fortnight or three weeks, according to the period at which the eggs were laid) the whole of the brood will be easily destroyed. The peculiar appearance of the leaf renders the gathering of the brood remarkably easy; while the fact that at this early period they are all together on one leaf, and that a week later they will be more scattered over the tree, as also that their destruction of the foliage is then at the minimum, peculiarly points out this period as the one most suitable to their destruction. I should say that on the 19th of July, from about ten trees in my own garden, I picked off fifty to seventy leaves, each containing from five to seventy eggs, and young larvæ just hatched. Since then I have daily picked off about ten leaves similarly attacked. If each possessor of a garden would thus destroy the young brood, we should have no more sawflies next year to trouble us. Other methods are advantageously used at a later period for their destruction; such are hand-picking, shaking the stems, when the larvæ drop down and can be killed; syringing the under surface of the leaves with alum and water, or watering the larvæ when shaken down with the same mixture: but all these methods are put in force when the damage is half done and when the larvæ are widely distributed over the trees, and are insignificant when compared with that which I now advocate for nipping the evil in the bud. Let us now look to our currant trees and next spring to our gooseberry trees, and we shall get rid of the enemy."

Paper read.

The President read a paper entitled "A List of the Genera and Species belonging to the Family Cryptoceridæ, with Descriptions of New Species; also a List of the Species of the Genus Echinopla."

September 1, 1862.

John Lubbock, Esq., V.P., in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—'The Zoologist' for September; presented by the Editor. 'The London Review' for August; by the Editor. 'Journal of the Society of Arts' for August; by the Society. 'Sitzungsberichte der Königl. bayer. Akad. der Wissenschaften zu München,' 1862, Part 1; by the Academy. 'Reise nach Mossambique,' von Dr. Peters (5ter Band, Insekten und Myriapoden); by J. W. Dunning.

Election of Members.

Beriah Botfield, Esq., M.P., F.R.S., &c., of Norton Hall, Daventry; Edmund Walcott, Esq., of the Oriental Club, Hanover Square; and Peter Inchbald, Esq., of Storthes Hall, Huddersfield, were elected Members of the Society; and W. Phillipps, Esq., of Reigate Lodge, was elected a Subscriber.

Exhibitions, &c.

Mr. Bond exhibited a female specimen of Sphinx Nerii, taken at rest in a garden at Hastings on the 2nd of August last; and specimens of a Tinea which he considered to be T. confusella, now for the first time taken in England, though it had previously occurred in Ireland. Mr. Stainton, however, was of opinion that the species was T. nigripunctella.

Mr. Bond, on behalf of Mr. Piffard, exhibited specimens of a Tortrix, apparently of the genus Spilonota, taken on the trunks of poplars near London, in June: the perfect insect concealed itself in the chinks of the bark, and was very sluggish. A description of the insect, by Dr. Knaggs, under the name of Spilonota Doubledayana, *n. sp.*, was read.*

Mr. Stainton exhibited a living specimen of Zelleria hepariella, and called attention to its position when in repose, resting on the four anterior legs, the hind legs being elevated by the side of the abdomen, and with the head downwards, like an Argyresthia. Mr. Stainton remarked that the pertinacity with which this species had been referred to the genus Gracilaria was rather singular; it formerly did duty in all British collections as Gracilaria rufipennella, and since that error had been pointed out, and a new genus, Zelleria, created for it in the family Argyresthidæ, the insect had actually been twice described as a Gracilaria—by Gregson as G. Haighii (Zool. 5295), and by Herrich-Schäffer as G. taxella, in his 'Schmetterlinge von Europa.' The specimen exhibited had been obtained by beating yew trees on Mickleham Downs, during the previous week.

Mr. Stainton also mentioned, as showing the progress that Entomology was making in other countries, that he held in his hand a list of the entomologists of Canada, who were thirty-six in number.

The Secretary read a letter addressed to him by Miss Farington, of Woodin Hall, Preston, Lancashire, requesting information as to the name, habits, and best mode of extirpation of a small beetle which occurred in prodigious numbers in an old house occupied as a grocer's shop; it had been observed for the first time in that neighbourhood during the present year, infested the furniture and beds, and (the writer stated) ate holes through the clothes of the inhabitants. Specimens of the insect were exhibited, which proved to be Ptinus hololeucus.

Sir John Hearsey exhibited various insects from India and China, including an enormous gad-fly, two fine species of Cimex, a Cetonia, the cotton-insect (Aphis), and other objects of interest.

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* This insect has since been recognized as Pædisca oppressana, described in 1835 by Treitschke, in the tenth volume of his 'Schmetterlinge von Europa.' The species is included among the British Tortrices in the Museum 'Catalogue' of the late J. F. Stephens, and in the 'Catalogue' of Mr. Doubleday (ed. 1859).

Mr. Waterhouse exhibited seven British species of Homalota not recorded in his 'Catalogue,' and with which he had but recently become acquainted, and read the following notes respecting them :—

"1. H. autumnalis, *Erichson*. One specimen found by myself in beating dead sticks in a damp wood at Hawkhurst, in Kent. I have likewise seen specimens in the collections of Dr. Power and Mr. Rye.

2. H. luteipes, *Erichson*. The specimens exhibited were presented to me by Mr. Wollaston, and were obtained at Whittlesea Mere. I have seen other specimens found by Dr. Power in the London district.

3. H. intermedia, *Thoms.*, *Kraatz*. The two specimens laid before the Society were found at Purley Down, by Dr. Power. I have seen no other British examples of the species.

4. H. parallela, *Mannerh.* This appears to be a northern species. I have seen a series of specimens forwarded to Mr. Douglas by Mr. Gregson, of Liverpool, and since specimens taken by Mr. Hislop in Scotland.

5. H. subterranea, *Mulsant*. The only specimen which I possess is from Paisley, and was given me by Mr. Morris Young.

6. H. lepida, *Kraatz*. This also appears to be a northern species. I possess a specimen from Scotland, for which I am indebted to Mr. Andrew Murray.

7. H. palleola, *Erichson*. I exhibit two specimens of this insect, which were sent me (with the above name attached) by Mr. Linnell, who finds the insect, I am informed, in the neighbourhood of Reigate. The species, I have no doubt, is correctly determined."

The Rev. Hamlet Clark exhibited specimens of four species of Hydroporus hitherto undescribed, and stated that descriptions would be given in the forthcoming number of the 'Journal of Entomology;' one of them was taken in Spain, the other three in Great Britain: they were—

1. Hydroporus Andalusiæ, very nearly allied to H. Clarkii, *Woll.* (which was taken in the Canaries); captured by Mr. Gray and Mr. Clark near Malaga, in May, 1856.

2. H. severus, allied to H. assimilis, *Payk.*, and more closely to H. fuscitarsis, *Aubé;* taken by Dr. Ernest Adams in a small river near Stowmarket, and by Mr. Clark in a running stream near Horning Fen, in May, 1855.

3. H. derelictus, allied to H. planus, *F.*, and H. erythrocephalus, *L.*; received from the Orkneys in August, 1855.

4. H. celatus, closely resembling H. vittula, *Er.*, and H. incertus, *Aubé;* taken by Dr. Power in a stream in Bradgate Park, Leicestershire, in August, 1855, and in a stream at Black Park, Uxbridge, in August, 1856, and by Mr. Brewer in a stream in Tilgate Forest.

Mr. Clark also exhibited Hydroporus 5-lineatus, *Zett.*, hitherto unrecorded as British, but which had been taken several years ago by Mr. Waterhouse, probably in the London district.

Mr. Lubbock exhibited specimens of a small Hymenopterous insect swimming in water by means of their wings; the specimens were taken with a net in a pond near Mr. Lubbock's residence in Kent, and had been recognized by Mr. Walker as Polynema fuscipes, of the family Proctotrupidæ. The fore wings were large, and profusely fringed all round; the hind wings small and very narrow: in the general appearance of the insect there was nothing to suggest the probability of an aquatic habit: the motion through the water did not appear to be in any way assisted by the legs, but

was due to the sharp jerking action of the wings. The insects were able to remain three or four hours beneath the water, but required occasionally to swim to the surface, or crawl thither up the stem of an aquatic plant, in order to breathe; so, at least, it was to be inferred from the fact that specimens which had been confined for a whole night, in such a manner as to be unable to reach the surface, were all found dead in the morning. Mr. Lubbock had never seen the insect fly, but of the other species of the genus one was known to feed on the eggs of Pontia brassicæ, and consequently was of terrestrial habits. With reference to what he termed the geological aspect of the question, Mr. Lubbock remarked that, if this insect had been found in a fossil state, no geologist would ever have imagined that it was an inhabitant of the water,—a circumstance which showed the necessity of some degree of caution in deducing from the structure of animals conclusions as to their habits.

Paper read.

Professor Dr. Schaum, of Berlin, communicated the following description of and remarks on Scaritarchus Midas, a new genus and species of the Coleopterous group Scaritidæ:—

Scaritarchus.

"Labrum antice subemarginatum. Mandibulæ intus unidentatæ, supra rugoso-striatæ. Maxillæ apice rotundatæ. Mentum dente medio simplici, profunde canaliculato, lobis lateralibus rotundatis breviori. Palpi maxillares articulo ultimo triangulari, lato, fere subsecuriformi, præcedentis longitudine; labiales articulo ultimo fortiter securiformi. Prothorax breviter cordatus, angulis posticis distinctis, basi subemarginatus. Coleoptera ovalia, striato-punctata. Tibiæ anticæ supra canaliculatæ, extus tridentatæ, dentibus inferioribus approximatis obtusis, tibiæ intermediæ fortiter unidentatæ. Trochanteres postici breves, validi, apice rotundato.

Scaritarchus Midas. Niger, prothoracis margine laterali basalique et elytrorum margine laterali late aureo, his crebre striato-punctatis, interstitiis subconvexis, carinula humerali in interstitium continuata. Long. 1½ poll. et ultra.

The splendid insect here described constitutes a new genus of Scaritidæ, and belongs to the first section of that group (Lacord. Gen. i. 192), which embraces Pasimachus, Emydopterus, Carenum and Scaraphites. It stands nearest Carenum, resembling it in the securiform last joint of the labial palpi, differing from it, however, in the broad, triangular and almost securiform last joint of the maxillary palpi, in the simply and feebly emarginated labrum, in the cordate prothorax with distinct angles, and in its strongly unidentate intermediate tibiæ. A few specimens, collected in Laos by the late M. Henri Mouhot, have recently been received by Mr. Stevens. A figure of it will be shortly given."

Special General Meeting.

The Secretary announced that a requisition, signed by six members of the Society, had been presented to the President and Council, requesting that a Special General Meeting be called, for the consideration of certain specified alterations in the Bye-Laws: a copy of the Bye-Laws with the proposed alterations was laid on the table, and was taken as read to the Meeting; and notice was given that a Special General

Meeting of the Society would be held for the above purpose on Monday, the 1st day of December next, at 7 P.M.

October 6, 1862.

F. P. Pascoe, Esq., V.P., in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors: — 'Proceedings of the Royal Society,' Vol. xii. No. 51; presented by the Society. 'The Journal of the Royal Agricultural Society of England,' Vol. xxiii. No. 49; by the Society. 'The Zoologist' for October; by the Editor. 'The Intellectual Observer' for September and October; by the Publishers, Messrs. Groombridge & Sons. 'Exotic Butterflies,' Part XLIV.; by W. W. Saunders, Esq. 'The Journal of the Society of Arts' for September; by the Society. 'The Athenæum' for September; by the Editor. 'The Journal of Entomology, descriptive and geographical,' No. 6; by the Proprietors. And the addition to the Library, by purchase, of the 'Genera des Coleoptères d'Europe,' Livraisons 108 à 111, was also announced.

Election of New Member.

Thomas Edward Hughes, Esq., of Wallfield, Reigate, was ballotted for and elected a Member of the Society.

Alteration of the Bye-Laws.

A copy of the Bye-Laws of the Society, embodying certain proposed alterations therein, was laid on the table and taken as read to the Meeting. Notice was given that a Special General Meeting would be held, for the consideration of such alterations, on Monday, the 1st of December next, at 7 P.M.

Exhibitions, &c.

Mr. Stevens exhibited Adelops Wollastoni, of which he had recently captured upwards of a hundred specimens at Hammersmith, chiefly under rhubarb plants.

Sir John Hearsey exhibited numerous Homoptera, principally Cicadæ, collected by himself in Northern India.

Mr. Desvignes exhibited a remarkable variety of Cynthia Cardui, taken on the sands at Margate, at the end of July or beginning of August last. The captor, Mr. Henry L. Stretton, of Forest School, Walthamstow, saw at the same time another specimen, which he considered to be the mate of the captured one; the latter was very similar to, but even more abnormal than, the variety figured in Westwood and Humphrey's 'British Butterflies.'

Mr. C. Fenn exhibited a Lepidopterous insect, apparently of the genus Aspilates, which was taken near Black Gang, in the Isle of Wight, at the end of August last, in company with specimens of Aspilates citraria. It was considered by most of the

Lepidopterists present to be a variety of A. citraria, and was remarkable for its extremely glossy and silken appearance, the absence of marking on the upper side, and the blackness of the under side of the wings.

Mr. F. Moore exhibited a specimen of the "Kolisurra" silkworm moth of the Deccan (Antheræa Paphia, *var.*), which had emerged from the pupa in this country on the 15th of September last. He also exhibited a specimen of Epicopeia Polydora, *Westw.*, and a drawing of the larva. The imago had emerged on the 18th of August last. Both the pupa and the drawing of the larva had been received from Captain T. Hutton, of Mussooree, N.W. India, with the following note, dated November 1st, 1861 :—"I captured here, this season, for the first time in twenty years, a specimen of Epicopeia Polydora. Since then I found, feeding on an oak tree (*Quercus incana*), at an elevation of 5200 feet, several caterpillars of a very curious appearance, which I am inclined to think belong to this species, simply because I know not to what else to refer them, and have never seen them before. When in motion they advance very slowly and awkwardly, with a wriggling gait, shaking themselves from side to side as if tottering on their feet; the head is only seen when the animal moves, and is jet-black, the whole body being densely clothed and concealed in long flossy stuff, an inch in length or more, resembling glossy floss silk, of a dazzling whiteness: this falls off to the touch in white powder. When the worm is ready to turn it descends from the tree, and spins a few silken threads around and over it, to hold dead leaves together, on the ground, in holes and corners at the roots of the trees, under stones, or such-like places, denuding itself of and enveloping itself in the white floss, for the purpose apparently of keeping itself warm during the winter months. The caterpillars were found small in the beginning of September, and in the first week of October they began to turn. The white floss stands up erect on the body, and has often a slight curl at the summit; when denuded of this the animal was of a dull livid olive-brownish hue."

Prof. Westwood remarked that the exhibition of E. Polydora was peculiarly interesting, from the fact that for a long time only a single specimen of the imago was known; and it had been a question between the late Edward Doubleday and himself whether it was a butterfly or a moth. The discovery of the larva proved that the insect had been properly referred to the Bombycidæ.

Mr. Newman communicated the following remarks on the ravages committed by the larva of Zeuzera Æsculi, and stated that the damage done to the young hop-poles in a single plantation in Sussex was estimated at a thousand pounds at the least:—

Destructive propensities of the Larva of Zeuzera Æsculi.

"I beg to exhibit some young shoots of the ash, the vitality of which has been entirely destroyed by the larva of Zeuzera Æsculi. In some parts of Sussex, Surrey, Kent and Herefordshire immense numbers of these young ash trees are grown for hop poles; but I have never before met with an instance in which they were seriously injured by the ravages of an insect. The information I have now the pleasure to hand the Society has been kindly transmitted to me by Mr. Jenner, of Lewes, so well known for his researches into the Diatomaceæ. In the spring of the present year the woodreeve and bailiff of Mr. J. C. Courthorpe, of Whyleigh, near Ticehurst, in Sussex, were greatly surprised to see innumerable young stems of previously healthy ash trees dying and dead, the bare leafless tops being very conspicuous. This led to an examination with a view to ascertaining the cause. On cutting off a number of these

tops, the interior of the shoot was found to be occupied by what was described as a large white maggot with a few black spots on it: this had eaten the pith and a great portion of the wood, leaving only a thin layer of wood within the bark, and invariably killing the whole of the shoot above the spot where the egg was laid, and where the caterpillar had originally entered. A few of these shoots are now before you, and the plantation consisted entirely of such, fine young plants full of vigour and three to five feet in height. Before Mr. Jenner's attention was invited to the subject, Mr. Courthorpe had ascertained that the larvæ were those of Zeuzera Æsculi. When Mr. Jenner examined the sticks, he found that in some the larvæ had already turned to pupæ; in others the full-fed larvæ were still unturned. In July, three of the pupæ produced moths, one a female, the others males. One died in its abortive attempt to become a moth, the stick having been cut off close to its head: another, concealed in a stick which had been split and again tied together, changed to a crippled pupa, and so died. In no instance could it be ascertained that the larva had eaten after the stick had been cut and its occupant examined. A number of pupæ still remain in the cut sticks. A somewhat careful examination of the sticks has led me to the following conclusions:—that the egg is laid on the smooth bark of the ash, just above one of the cicatrices whence a leaf of the preceding year has fallen: the little grub, entering the bark through a minute hole which it has gnawed, ascends the stem, at least as far as the next cicatrix, the excavation thus made assuming the shape of a very acutely pointed inverted cone; when arrived at its distal extremity the larva appears to turn round and descend to the point whence it started, devouring and widening its gallery as it descends: when arrived at the starting point the figure of its gallery is entirely changed, and is now a smooth cylindrical bore; at the lower extremity the larva gnaws the wood away, making a convenient chamber for its transformation, and leaving only the outer cuticle of bark reduced to the thinness of tissue-paper: this is ruptured by the moth in its struggles to escape, and it emerges from its prison head downwards. There is no evidence to show the duration of the larva state."

Mr. Waterhouse and Mr. J. S. Baly referred to cases of damage done to ash-poles by Pachyta collaris; and Prof. Westwood mentioned instances of the destruction of hop-poles by Clytus Arietis; the poles attacked by the Clytus were, however, of oak and not of ash.

Mr. Stainton communicated the following:—

Note respecting the Micropteryx bred from Hazel-leaves by Herr Kaltenbach.

"Having long had an intense desire to know what was really the species that Herr Kaltenbach had bred from hazel-leaves, I visited Aix la Chapelle for the purpose of satisfying my curiosity, being of opinion that, especially in Entomology, there is no saying more true than 'Seeing is believing.' Having now seen a series of the Micropteryx bred by Herr Kaltenbach, I am able to verify his assertion that the insect is Micropteryx fastuosella; and having seen the dried hazel-leaves in which the larva had fed, I can no longer doubt that a Micropteryx larva does feed in the leaves of hazel (*Corylus Avellana*). M. fastuosella is closely allied to M. subpurpurella, which we know to be attached to oak, and which has now been bred by Mr. Wilkinson from larvæ mining in oak-leaves, and it was rather a doubtful question whether

M. fastuosella was really distinct from M. subpurpurella. In conversation with Herr Kaltenbach I learned that M. fastuosella appears with him as early as March, and that the feeding larvæ are to be found in April, when the nut-leaves are not yet fully expanded, and the dried nut leaves which I saw fully confirmed this statement by their small size. By the end of April the season for these larvæ is over.

"I should trust that with this information we should next spring have no difficulty in finding the hazel-miners in England."

Prof. Westwood exhibited a further portion of the additions recently made to the Oxford Museum by Mr. Stone, of Brighthampton. The exhibition on the present occasion consisted principally of the dried leaves of trees and plants which had been mined by the larvæ of Lepidopterous, or in more numerous instances of Dipterous, insects. The leaves were arranged for the cabinet on cardboard, so as to show at a glance the distinctions between the various mines, — a point of considerable importance in the determination of the different species.

Prof. Westwood also called attention to the state of the turnip crops in the Midland Counties; he had been informed that the turnips had been attacked by a profusion of a green insect, like that on the rose, and hence he had inferred the presence of a species of Aphis. Some turnip-leaves had subsequently been sent to him; the outer ones were dead and shrivelled, and both sides of the leaves and the stems were coated with a thick white mould, but no Aphides were visible. Whether the white matter had by his informants been mistaken for the insect, or whether it was the result of the attacks of Aphides, the Professor was unable to state; but he thought the latter hypothesis the more probable, and that the plants had been reduced to a bad state of health by the attacks of an Aphis, and the mould had grown in consequence.

Prof. Westwood also called the attention of the Members present to the Report of the discussion which took place at the April Meeting of the Society, upon a paper by Dr. Schaum, on the impropriety of superseding generally-adopted names of species in Entomology, where descriptions of the same species had previously appeared, but which, from the imperfect nature of the description, it had not been possible to recognize without an examination of the type specimens of the original author. After a short abstract of Dr. Schaum's paper, Prof. Westwood was stated, in the Report, to have opposed the views of Dr. Schaum. Such was not, however, the case; in fact he cordially adopted every word contained in the abstract of the Memoir as published in the 'Proceedings' for May last, thinking that by so doing he was lending a hand against the publication of carelessly-drawn-up descriptions, often made without a fit preparatory examination, either of the insects themselves, or the works of the authors who had treated upon the groups to which they belonged. To sink entirely the writings of authors who might occasionally err in their descriptions, or even those whose descriptions were habitually drawn up in a careless manner, as had been recently suggested, appeared to him too violent a measure, although their retention entailed a painful amount of labour on subsequent entomologists, unattended also, in many instances, by any certitude as to the species intended. For himself he believed it more correct that every description should stand on its own footing; and if it could be shown to be unintelligible, or should exhibit such an amount of carelessness in its composition as to render it impossible for an entomologist to determine a species by it, he should not hesitate to consider it as if it had never existed. It was true that he considered the law of priority in nomenclature to be of the

highest value, and would endeavour to maintain it wherever possible. He thought, however, a slight modification of the law was requisite in the case of the publication of detached species brought out with the view of anticipating an author who was known to be engaged in working an entire Monograph of the group to which the species belonged. The time required for composing and publishing Monographs was often very considerable, and much delay occurred, over which the monographer had no control: in such cases Prof. W. thought that courtesy to the monographer should give him precedence over the authors of at least such descriptions of detached species of the group as appeared during the year in which the Monograph should be published.

The question had been raised (chiefly with reference to the Stephensian descriptions) whether the examination of the specimens assumed to be the types from which an original description was drawn, did not confer a more precise character upon an insufficient description. Prof. W. thought that this ought not to be the case. If a description (drawn up with the utmost skill of the describer) be so loose that a subsequent writer cannot reasonably suppose that an insect before him is the subject of the description of the previous writer, and then should, *bonâ fide*, publish a good description of it, not having the ordinary means of examining the original types, be considered that the name published with the second good description ought to be maintained. If, however, a subsequent writer should have the means of examining the original types, and should find the original description defective, it is his duty, in the interest of Science, to clear up the doubts which might exist, by describing more fully the species, using of course the old specific name.

Papers read.

The following papers were read:—"Descriptions of several new and rare Lucanoid Coleoptera," by Major F. J. Sidney Parry, F.L.S.; and "Descriptions of new East-Asiatic Species of Haliplidæ and Hydroporidæ," by the Rev. Hamlet Clark, M.A., F.L.S.

November 3, 1862.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—'Sitzungsberichte der Königl. bayer. Akademie der Wissenschaften zu München,' 1862, I. Heft. 2, 3; presented by the Academy. 'The Canadian Naturalist,' Vol. vii. No. 4; by the Natural-History Society of Montreal. 'A Catalogue of the Lepidoptera of Devon and Cornwall,' Part 1; by the Author, J. J. Reading, M.E.S. 'The Zoologist' for November; by the Editor. 'The Journal of the Society of Arts' for October; by the Society. 'The Athenæum' for October; by the Editor. 'The Intellectual Observer,' No. 10; by the Publishers, Messrs. Groombridge and Sons.

'Entomological Botany' (Reprinted from the 'Zoologist' for 1854, 1855 and 1856); by the Author, H. T. Stainton. 'Stettiner Entomologische Zeitung,' 1862, Nos. 7—9; by the Entomological Society of Stettin. 'Journal of the Proceedings of the Linnean Society,' Vol. vi. No. 24; by the Society.

Election of Member.

John S. Stevens, Esq., of 24, Bloomsbury Street, London, was ballotted for and elected a Member of the Society.

Alteration of the Bye-Laws.

A copy of the Bye-Laws of the Society, with certain proposed alterations therein, was laid on the table and taken as read to the Meeting. Notice was given that a Special General Meeting would be held, for the consideration of such alterations, on Monday, the 1st of December next, at 7 P.M.

Exhibitions, &c.

Sir John Hearsey exhibited Smerinthus denticulatus from Barrackpore, near Calcutta, and drawings of the larvæ feeding on Cordia Sebistena. In addition to a caudal horn the young larva had a frontal one, which, however, was entirely cast off at the last change of skin.

Mr. Bond exhibited two specimens of Lithosia Caniola, bred from the egg by Dr. Knaggs. They had remained ten days in the oval, eleven months in the larval, and ten days in the pupal state. The larva (a coloured drawing of which was shown) fed on clover, and changed its skin about forty times.

Mr. Bond also exhibited a monstrosity of Acherontia Atropos, the right side of which was of the usual form and hue, whilst the wings on the left side were darker, suffused and without distinct markings, and singularly jagged on the costa and outer margin.

Mr. Stainton exhibited bred specimens of Bactra uliginosana which he had received from Stettin, where the larva had been found rather plentifully on Lythrum salicaria. The species is one of the few Tortrices which are double-brooded, appearing in June and again in September. The June specimens have almost invariably a quadrate black spot on the disc, but in the September specimens, which vary considerably in other respects, the discoidal spot is generally wanting. Of the six specimens exhibited two belonged to the June, four to the September brood.

Mr. Stainton also called the attention of the Meeting to a very valuable paper on the genus Nepticula from the pen of Von Heinemann, of Brunswick, which has just appeared in the August and October numbers of the 'Wiener Entomologische Monatschrift.' It extends to fifty-two pages; thirty-three species are described, of which no less than ten are new, and independently of the value of the descriptive portion of the paper, it contains some very interesting observations; for instance, on the remarkable shortness of life of many of the Nepticula larvæ. How short that life actually was had not at present been determined, but a friend of Von Heinemann's had observed that on some apple twigs, which he examined with great attention, and carefully picked off every leaf in which he could find a mine, he actually found empty mines on some of the leaves after the lapse of thirty-six hours, showing that in that short time larvæ which had been previously invisible had fed up and gone away. This extreme shortness of larval life was only manifested in the summer broods of larvæ, the autumnal

larvæ living considerably longer. Mr. Stainton remarked that it was but two years ago he was reading a paper at the British Association at Oxford, in which he commented on the extraordinary fact that the larvæ of Nepticula never moulted. Now the observations of Von Heinemann show that they do moult: of course there is something abnormal in the moulting of these mining larvæ, but after the larva has been inactive for a short time its skin cracks at the head, and it thus proceeds to eat its way forward, because it can only by eating a path before it obtain space to draw itself from its old skin; this in the confined space of the mine gets drawn forward for a slight distance, and is eventually lost to sight in the excremental track. Von Heinemann had observed the moulting in several species, and had remarked that it generally took place at some part of the mine where the latter changed its character, either from a slender gallery to a blotch, or from a spiral mine to an irregular one, or from a very narrow gallery to a broader one. With regard to the specific distinctions Von Heinemann found important characters were afforded by the cilia and by the length of the antennæ, only as the latter varied in the sexes it was necessary in this respect to compare males with males and females with females. In examining the wing-veins of these insects, which he had done in a number of species, Von Heinemann found there were three distinct forms, a complicated form, a comparatively simple one, and an intermediate form between the other two.

Mr. Stainton then read the following brief notes on the ten new species:—

1. *N. Æneella.* Closely allied to N. ruficapitella. Larva on hawthorn, in a mine like that of N. Oxyacanthella.

2. *N. Samiatella.* A black-headed oak species, distinct from N. atricapitella; the mines not distinguishable.

3. *N. Nitidella.* A single caught specimen, with polished pale bronze anterior wings.

4. *N. Basiguttella.* A new species from an oak-feeding larva, whose mine is entirely filled with green excrement.

5. *N. Pretiosa.* Bred from Geum urbanum. Allied to N. Æneofasciata.

6. *N. Dulcella.* Allied to N. Continuella. Bred from strawberry leaves; larvæ in mines similar to those of N. Fragariella.

7. *N. Inæqualis.* Also bred from strawberry leaves; the wings narrow and the fascia placed very posteriorly.

8. *N. Distinguenda.* Bred from birch, mine not sufficiently observed. Allied to N. Betulicola and to N. Glutinosæ.

9. *N. Obliquella.* Captured specimens. Perhaps most nearly allied to N. Salicis.

10. *N. Simplicella.* Captured specimens; on beech trunks. Allied to N. Immundella.

Mr. Stainton said he thought it was rather hazardous describing Nepticulæ from captured specimens, but that he must admit the whole paper of Von Heinemann showed such sharp-sightedness and so much acumen that all his remarks were entitled to considerable weight. It might be mentioned, for instance, that Von Heinemann had found a character often useful for separating species which we could not see in any of our specimens, because it was in the centre of the prothorax, exactly where we put the pin; hence this character could be observed only in those specimens which were pinned through the abdomen.

Professor Westwood called attention to an article by Mr. Newman in the 'Zool-

ogist' for October last (Zool. 8216), on the genus Acentropus. Referring to the date of his own memoir in the 'Transactions of the Entomological Society,' the Professor was surprised to find that Mr. Newman had assumed a share in the merit (whatever it might be) of the reference of the genus to the order Lepidoptera, which was due to himself and Dr. Hagen. His grounds for such reference were—1. The nature of the clothing of the wings. 2. The possession of tippets. 3. The possession of a bristle and socket connecting the wings. 4. (As proved by Mr. Edwin Brown's discovery of the preparatory states), the structure of the pupa. Mr. Newman's arguments were—1. That the scales in Acentropus are unlike those of any other Lepidopterous insect, and resemble those on the elytra of some beetles. 2. That tippets do not exist in the Psychidæ. 3. That the wings in Hymenoptera are fixed together by a series of hooklets. 4. That it is not stated how the pupa of Acentropus differs from that of Phryganea. To these arguments the Professor replied— 1. That the clothing of the wings of Acentropus consists of scales (and not of hairs as in Trichoptera). They vary in their form, and Lyonnet has shown how infinitely the scales in a single species (Cossus) vary, whilst no one would think of assigning Acentropus to the order Coleoptera. 2. That (even if true), the absence of tippets in Psyche is not proof that another insect which does possess those appendages does not belong to the order in which tippets are exclusively characteristic. 3. The spring and socket of Acentropus are identical with those of nocturnal Lepidoptera, and totally unlike the hooklets of the Hymenoptera, with which order no one would think of uniting Acentropus. 4. The pupa of Acentropus agrees with those of nocturnal Lepidoptera, except in a modification of the spiracles, as stated by Professor Westwood in a paper read before the British Association at Oxford in 1860, of which a slight report is published in the volume of 'Reports' of that Meeting. It entirely differs from that of Phryganea, both in general characters, and especially in wanting the peculiar mandibles of the pupa by which Phryganea is associated with the subnecromorphotic Neuroptera.

Professor Westwood exhibited a further series of leaves of plants mined by Lepidopterous and Dipterous larvæ, which had been arranged for the cabinet by Mr. Stone of Brighthampton, and by him presented to the Oxford Museum.

Professor Westwood also called attention to the ravages committed on celery plants by the larva of the Dipterous Tephritis Onopordinis.

The President exhibited the different stages of a species of sawfly which he conceived to be Nematus trimaculatus, *St. Farg.*, and read the following extract from a letter from F. M. Rayner, Esq., of Callowell, Stroud, dated the 7th of June, 1862:—

"Having seen several letters and papers in the 'Times' and other publications, with reference to the great destruction to the gooseberry and currant bushes by a grub said to be the caterpillar of a Lepidopterous insect (Phalæna wavaria), I directed my attention to the subject. I collected several of the larvæ in the beginning of May, and discovered at once by the number of the feet (18) that they were not Lepidopterous. I fed them upon the leaves of their respective trees, and examined them frequently during the day. No particular change occurred until the last casting of the skin, when the larva turned from a bluish green, covered with shining jet-black tubercles, each bearing a seta, to a beautiful yellowish green, the first and the last two segments being of a pale orange-colour, and having no tubercles or setæ, but quite smooth, with the exception of the last few posterior segments, which were slightly pubescent. The cocoon was at first green, but afterwards changed to black. In about three weeks the imago made its appearance in the form of a Hymenopterous insect. I think it belongs

to the Securifera, Tenthredinata, *Latreille*, but I know little or nothing about the Hymenoptera. I have sent you a small bottle containing specimens of the insect in its different stages, but the spirit has slightly altered their colour. One circumstance strikes me as being rather curious: all the larvæ I collected turned out females. I was obliged to procure the males by pinning a female to a piece of cork and placing it under the bushes."

Mr. S. Stevens mentioned that the Coleopterous insect described by Dr. Schaum at the September Meeting of the Society, under the name of Scaritarchus Midas, had been previously described under the name of Mouhotia gloriosa in Guérin's Magazine for August last, and, according to the rule of priority, the last mentioned name must prevail.

Mr. W. W. Saunders exhibited a dozen species of Catascopus collected by Mr. A. R. Wallace in the East Indian Isles, including the four new species described in the paper hereinafter referred to, in connection with which Professor Westwood stated that a paper had been published by the Natural History Society of Basle, in or about 1843, containing descriptions of Catascopi from Africa. This paper appears to have escaped notice, and he thought it not unlikely that some of the insects therein described would be found to be identical with some of those afterwards described by Hope and Andrew Murray.

Papers read.

Mr. W. W. Saunders read a paper "On the species of Catascopus found by Mr. Wallace in the Malay Peninsula and the East India Isles," containing descriptions of four new species, C. Schaumii, C. Aruensis, C. lævigatus and C. splendidus.

Mr. Waterhouse read a "Note upon certain British Species of the Genus Quedius, in which the elytra are more or less æneous and the scutellum punctured."

Special General Meeting.

December 1, 1862.

Frederick Smith, Esq., President, in the chair.

Alteration of Bye-Laws.

The Secretary read a requisition signed by six Members of the Society, and presented to the President and Council, requesting that a Special General Meeting might be called for the consideration of the alterations in the Bye-Laws therein specified. He announced that the same had been read at three successive General Meetings of the Society, and also read the notice to Members convening the Special Meeting for that evening. The proposed alterations in the Bye-Laws were then put to the vote and adopted.

Ordinary Meeting.

The Ordinary Meeting of the Society was held the same day.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—'Classification of the Coleoptera of North America,' Part 1, by John L. Leconte, M.D.; 'Monograph of the Diptera of North America,' Part 1, by H. Loew; 'Synopsis of the Described Lepidoptera of North America,' Part 1 (Diurnal and Crepuscular Lepidoptera), by John G. Morris; 'Synopsis of the Neuroptera of North America, with a List of the South-American Species,' by Herman Hagen; all compiled for and presented by the Smithsonian Institute. 'Proceedings of the Entomological Society of Philadelphia' for 1861 and 1862; by the Society. 'Notes on the Thysanura,' Part 1 (Smynthuridæ); by the Author, John Lubbock, F.R.S., &c. 'Proceedings of the Literary and Philosophical Society of Liverpool during the Fifty-first Session, 1861—62,' No. xvi.; by the Society. 'The Zoologist' for December; by the Editor. 'On the Genus Colias in North America;' by the Author, Samuel H. Scudder. Taylor's 'Calendar of the Meetings of the Scientific Bodies of London for 1862—63;' by the Publishers. 'The Journal of the Society of Arts' for November; by the Society. 'Wiener Entomologische Monatschrift,' Band I—V; by Julius Lederer. 'Die Nocturinen Europa's mit Zuziehung einiger bisher meist dazu gezählten Arten des Asiatischen Russland's, Kleinasien's, Syrien's und Labrador's: systematisch bearbeitet von Julius Lederer;' by the Author.

New Members.

Percy C. Wormald, Esq., of 6, Brondesbury Terrace, Kilburn, was ballotted for and elected a Member of the Society.

Certificates in favour of F. Moore, Esq. (a Subscriber to the Society), and of E. A. Smith, Esq., of 27, Richmond Crescent, Islington, as Members, were read for the first time, and ordered to be suspended in the Meeting Room.

Exhibitions, &c.

Mr. Stevens exhibited a fine collection of Coleoptera and Diurnal Lepidoptera, collected by Mr. A. R. Wallace in New Guinea and the adjacent island of Salwatty.

Mr. F. Moore exhibited specimens of a white saccharine substance or kind of "manna," which is found abundantly on the leaves of certain Eucalypti (E. dumosa, &c.), in the north-west parts of Australia Felix, and is eaten by the natives, who call it "lerp" or "laap." This substance is stated by Mr. T. Dobson (Proc. Royal Society of Van Dieman's Land, 1851) to be the cup-like coverings of a species of Psylla (P. Eucalypti), formed by the insect whilst in the larva state.

Mr. Hewitson sent for exhibition some stems of laurel trees, with the following note in reference thereto:—

"In cutting down some laurels, at some four or five feet from the ground, I noticed that they were pierced longitudinally by a round hole about the size of a pistol-bullet, at first open and clear, afterwards filled with sawdust, but so loose that it was easily pushed out for the length of a foot with a very slender stick; but in cutting sections

from the tree lower down, though the hole increased in size, it also became more obstructed until near the root, where (although there is still an indication of the perforation) the hole proceeds no further, after passing through nearly five feet of solid wood. One piece of the tree shows where the hole commences, at the side where a branch has been cut off; the other was four feet lower down, where the hole becomes obstructed and looks more like decay than the boring of a grub. Is this a question for entomologists or for arboriculturists?"

To this query no satisfactory answer was given; but it was suggested that the perforation, if caused by a larva at all, was probably made by that of Zeuzera Æsculi.

Mr. Waterhouse exhibited the following four British species of Coleoptera, *viz*, Oxytelus piceus, *Erichson*, *&c.*, Quedius umbrinus, *Erichson*, Haplocnemus nigricornis, *Fab.*, and Lathridius rugosus, *Herbst*, and communicated the following notes relating to them:—

"With regard to the Oxytelus I have to state that the species was introduced into my Catalogue from the determination of a single male specimen taken by myself, but of which I did not know the exact locality. Recently, however, I have discovered a second specimen (a female) amongst some Staphylinidæ which were procured by me from cow-dung in the well-known field immediately opposite the inn at Birchwood Corner, on the 1st of July, 1859. O. piceus most closely resembles O. laqueatus, but may be distinguished by the comparatively large size of the eye, by there being only a single groove on the back part of the head above (instead of three grooves, as in O. laqueatus), and by the head being less concave in front. In the male of O. laqueatus the longitudinal diameter of the head behind the eye is greater than that of the eye, whereas in O. piceus the eye presents the greater diameter. In the female of the last-mentioned insect, from the large size of the eye, and the great prominence of that organ, the head nearly resembles that of O. sculptus, but that insect is readily distinguished from O. piceus by its comparatively long antennæ and by certain peculiarities of structure. In O. piceus the fifth is the first of the dilated pubescent joints, and presents a peculiar modification of the peduncle: at first small and slender, to join the preceding joint it is suddenly dilated above the base into a shallow cup-like process, to which a nearly hemispherical apical part of the joint is attached; this latter part is rough and pubescent, whilst the peduncular part is smooth. In the following joints the peduncle is dilated above the base into a circular flat (or nearly flat) plate, attached to which is the body of the joint. In O. sculptus the peduncle of the fourth joint is dilated into a round, slightly concave (and in the following joints flat) plate; and the dilated pubescent joints may here be said to commence from the fourth instead of the fifth joint. This structure corresponds very closely with that which will be found in O. rugosus and O. insectatus, whilst all the remaining British species of Oxytelus correspond very closely in the structure of their antennæ with O. piceus.

"Of Quedius umbrinus I have long possessed a British specimen, but had never determined it until recently, when a second specimen was sent me to be named by Mr. Morris Young of Paisley. It most nearly resembles the dark (pitchy black) varieties of Quedius mauro-rufus, but may be distinguished by its less thickly and more strongly punctured elytra. The antennæ are rather stouter and the joints longer, and the head is somewhat broader than in Q. mauro-rufus.

"Haplocnemus nigricornis. Dr. Power long since called my attention to the fact that we possessed two species of Haplocnemus in England, and I subsequently obtained

a second species from Charles Turner, who took it in the New Forest. It differs from our well-known H. impressus of Marsham in being a trifle smaller, in the general colouring of the upper parts (instead of being of a brassy bronze hue being more inclined to green, or, in parts to blue), and in the tibiæ, tarsi and apex of the femora being entirely of a palish testaceous colour. The three basal joints of the antennæ, moreover, are chiefly testaceous, the first and third joints being but slightly tinted with æneous. The thorax is rather narrower and longer, more contracted in front, and less thickly and less strongly punctured; the reflected lateral margin is rather broader, and is rufescent, as is likewise the lateral margin of the elytra on the under sides, and these parts are less distinctly crenulate. Lastly, the punctures of the elytra are larger, less numerous and less clearly defined. Upon re-examining the descriptions of Fabricius, Gyllenhal, &c., I now believe that we must apply the name nigricornis to this insect, and retain that of impressus for the Marshamian species, with the tibiæ more or less dusky. The species would then stand thus:—

1. Haplocnemus nigricornis.
   Aplocnemus impressus, *var.*, *Steph. Illustr.*
   Dasytes nigricornis, *Fab. Syst. El.* ii. 73, 10; *Ent. Syst.* i. 2, 81, 16.
   ——— ———, *Payk. Faun. Suec.* ii. 158, 3.
   ——— ———, *Gyll. Ins. Suec.* i. 327, 4.

2. Haplocnemus impressus, *Steph. Illustr.* iii. 316 (Aplocnemus, *id.*) and collection.
   Crioceris impressus, *Marsh. Ent. Brit.* 226, 16.
   Haplocnemus nigricornis, *Waterh. Catalogue.*

"Lathridius rugosus, *Herbst, Coleopt.* v. 6, 3, Tab. 44, fig. 3, c, C. (Latridius).
——— ———, *Gyll. Ins. Suec.* iv. 140, 20.
——— ———, *Mannerh. in Germar's Zeitsch. für Entom.* v. (1844), 90, sp. 28.

'L. oblongus, niger, glaber, ore antennis pedibusque ferrugineis, thorace brevi, lato, crebre punctato, lateribus dilatato-rotundatis, dorso convexo, medio obsolete canaliculato, postice transversim profunde impresso; elytris obsoletius striato-punctatis, interstitiis lævibus. Long. $\frac{5}{6}$—1 lin.; lat. $\frac{3}{8}$—$\frac{1}{2}$ lin.'

"The above description, from Mannerheim, agrees perfectly well with the insect now exhibited, and which I long since separated in my English collection as a distinct species, but was unable to name. Finding some German specimens like it in the British Museum collection, and bearing the name 'rugosus,' I was led to examine the descriptions of that species, which I must formerly have overlooked. I suspect that the very inappropriate specific name applied to it was the cause of the oversight, it being distinguished by the smoothness of its elytra. I have seen specimens of this species in the Rev. A. Matthews' collection. It is usually smaller than L. minutus and of a shorter form, and approaches more nearly to my L. testaceus, but that insect is still shorter and broader, has the elytra more distinctly punctate-striated, and its colour appears to be always testaceous, whereas L. rugosus is black."

Mr. M'Lachlan exhibited a Dipterous parasite on the larva of a Trichopterous insect. It had been bred by Mr. Parfitt, of Exeter, from a larva-case of Limnephilus marmoratus, and had emerged through the water, though the eggs had probably been laid by the parent fly when the case was floating on the surface. The name of Hydrotachina Limnephili was proposed for this novelty.

Papers read.

Major Parry communicated two papers: one entitled "Some Remarks on the Catalogue of Lucanidæ recently published by M. James Thomson in the 'Annales de la Société Entomologique de France';" the other entitled "Further Descriptions and Characters of undescribed Lucanoid Coleoptera." The latter paper was supplementary to that read by Major Parry at the October Meeting of the Society. The whole of these descriptions are intended to be incorporated with others in a general Catalogue of the family, to be published, with figures, in the 'Transactions' of the Society. An abstract of the latter paper, with characters of the genera and species, is given below.

Fam. LUCANIDÆ.

Gen. Homoderus, *Parry*.

Corpus subrotundatum, robustum. Clypeus transversus, bidentatus, anticè leviter emarginatus. Mandibulæ capite vix longiores, falcatæ. Caput magnum, transversum, antice depressum, infra oculos armatum. Antennarum clava 4-articulata, scaphus elongatus. Prothorax lateribus pone medium (in utroque sexu) sinuatis et spino acuto armatis; angulis anticis rotundatis, posticis emarginatis. Pedes graciles. Tibiæ posticæ inermes.

Homoderus Mellyi, *Parry* (*vide Trans. Ent. Soc. N. S.* v. tab. xvi. f. 7, 8).

Mas.—H. fulvo-testaceus; mandibulis gracilibus, intus ad basin unidentatis et supra pone medium spinis nodosis tribus aut quatuor irregulariter armatis; capite sublente confertissime granuloso, supra oculos plaga nigra notato. Prothorace maculis quatuor nigris, transversim positis, in medio subtiliter longitudinaliter canaliculato. Elytris lævissimis.

Obs. Mesotopo Tarando affinis.

Long. corp. (mandib. incl.) fere unc. 2.

Hab. Afric. Occ. (Guinea, Old Calabar). In Mus. Parry et Mniszech.

Fœm.—H. nigro-fuscus; mandibulis gracilibus brevibus, rugoso-punctatis, et dente parvo apicem versus instructis; capite irregulariter et fortiter rugoso-punctato. Clypeo parvo, rotundato. Prothorace luteo, maculis quatuor nigris transversim positis, duabus medianis magnis, antice connexis, lateralibus parvis, rotundatis. Elytris singulis vitta lutescenti flava ab humero ad apicem notatis. Pedibus nigris, femoribus supra flavo-rufo maculatis. Tibiis posticis paulo curvatis, extus irregulariter tribus vel quatuor spinis minimis instructis, intermediis posticisque unidentatis.

Long. corp. (mandib. incl.), unc. 1.

Mesotopus Tarandus, ♀.

Lucanus Tarandus, ♂, *Swed. in Act. Holm.* 1787, 3, 186, t. 8, f. I.

M. ebenina nigra, nitidissima; capite subrugoso-punctato, antice excavato, bispinoso, postice lævi, politissimo; mandibulis brevibus trigonis intus bidentatis; elytris subovalibus. Tibiis extus ut in maribus, 3-dentatis.

Long. corp. (mandib. incl.), unc. 1, lin. 6.

Hab. Afric. Occ.

Lucanus Hopei, ♂, *Parry* (*var. max.*, ♀ *ignota*).

L. nigro-brunneus, politus; mandibulis elongatis, intus quinque-dentatis; capite supra singulariter coronato lobato; femoribus subtus vitta fulva notatis, in pedibus anticis fere obsoleta.

Long. corp. fere unc. 2; mandib. unc. 1.

Hab. Ind. Or. Coll. Parry.

Lucanus Smithii, ♂, *Parry* (♀ *ignota*).

L. nigro-fuscus, subtus dense villosus; elytris rufo-ferrugineis, nitidis; mandibulis apicibus furcatis, intus ante medium lobo tridentato armatis.

Long. corp. unc. 1, lin. 7.

Hab. Ind. Sept. Coll. Parry.

Hexarthrius? Westwoodii, ♂, *Parry* (*var. max.*, ♀ *ignota*).

H. nigerrimus; mandibulis elongatis, elevatis, singulariter ad basin excavatis, angulatis, supra et infra dente magno armatis; capite magno, angusto. Prothorace lateribus inter medium et apicem denticulo parvo instructis. Antennarum flabello 4-articulato. Tibiis posticis simplicibus.

Long. corp. unc. 2, lin. 3; mandib. unc. 1, lin. 3.

Hab. Ind. Or. Coll. Parry.

Hexarthrius Bowringii, ♂, *Parry* (*var. max.*, ♀ *ignota*).

H. nigro-fuscus, nitidus; antennarum clava 6-articulata, mandibulis apice subrecurvis, intus 3-dentatis, 1o et 2do pone medium, tertio ad basin subfurcato. Tibiis anticis serratis, intermediis unidentatis, posticisque simplicibus.

Long. corp. unc. 2; mandib. lin. 9.

Hab. Ind. Or.

Odontolabis Castelnaudi, ♂, *Parry* (♀ *ignota*).

O. giganteus, niger, glaberrimus; mandibulis capite parum longioribus, valde exsertis, interne ad basin dente magno obtuso armatis, et ante basin apicem versus plurimis denticulis nodosis irregulariter instructis, apicibus subfurcatis; capite magno, antice depresso, margine subelevato, angulis anticis oblique rotundatis, et infra oculos spino magno obtuso instructo. Prothorace transverso; capite latiori, lateribus antice obliquis, angulis posticis emarginatis; elytris subovalibus, brunneo-testaceis, lævissimis, latitudine prothoracis, marginibus externe suturaque tenuiter nigris. Tibiis anticis curvatis, et prope apicem spino minuto armatis, quatuor posticis inermibus.

Long. corp. unc. 2, lin. 5; mandib. lin. 9.

Hab. Sumatra. Coll. Castelnau.

Odontolabis Somneri, ♂, *Parry* (*var. max.*, ♀ *ignota*).

O. capite, pronoto, pedibusque, brunneo-testaceis; capite magno, antice emarginato, pone oculos supra et infra angulato; mandibulis gracilibus, falcatis, capite

paulo brevioribus, apicibus acutis, intus bidentatis. Prothorace antice acute angulato, postice valde emarginato. Tibiis anticis curvatis, extus spinis duabus aut tribus armatis, posticisque inermibus.

Long. corp. unc. 1, lin. 5 ; mand. circa lin. 5.

Hab. Manilla. Mus. Dom. Somner (Altona).

Cladognathus Wallacei, ♂, *Parry* (*var. max.*, ♀ *ignota*).

C. niger. Elytris dorso fusco castaneo, lateribus nigro marginatis, vitta flava latiuscula notatis; labro producto, trigono-conico ; mandibulis porrectis, haud arcuatis, irregulariter denticulatis, et intra basin versus fortiter emarginatis. Tibiis anticis extus irregulariter denticulatis, quatuor posticis inermibus.

Long. corp. fere unc. 2 ; mandib. lin. 8.

Hab. Ins. Gilolo. Coll. Wallace.

Cladognathus Lafertei, ♀.

C. Lafertei, ♂, *Reich. Revue. Zool.* 1852.

C. fuscus ; capite rugoso punctato, postice lævigato ; mandibulis brevibus, rugosis, unidentatis. Elytris pallide ferrugineis, inæqualiter punctatis, sutura ad basin marginibusque, nigro-fuscatis.

Long. corp. (mandib. incl.), unc. 1.

Hab. N. Hebrides.

Cladognathus productus, *Parry*.

Mas.—C. fusco-niger, subopacus ; mandibulis capite brevioribus, parum curvatis, intus irregulariter denticulatis; capite emarginato, angulis anticis oblique truncatis, infra oculos paulo inflato. Prothorace fusco-cinnamomeo cincto, capite latiori, antice angustato, lateribus fere rectis, angulis posticis rotundatis. Elytris fusco-cinnamomeis, sublente confertim punctulatis, apice producto subacuminato. Tibiis anticis irregulariter obtuse serratis, quatuor posticis simplicibus.

Long. corp. unc. 1 ; mandib. lin. 5.

Hab. Ternate. Coll. Wallace.

Fœm.—C. niger, subnitidus; clypeo parvo, rotundato ; mandibulis brevibus, unidentatis ; capite antice rugoso, punctulato, postice læviusculo. Prothorace antice angustato lateribus oblique rotundatis, fulvo-brunneis, in medio nigro maculatis. Elytris fulvo-cinnamomeis, marginibus externe et sutura tenuiter nigris. Pedibus rugoso-punctatis, nigris. Tibiis intermediis denticulo minuto armatis, posticisque inermibus.

Long. unc. 1 (mandib. incl.)

Hab. Ins. Waizou. Coll. Wallace.

Cladognathus quadrinodosus, ♂, *Parry* (♀ *ignota*).

C. ferrugineo-fuscus ; capite vertice minute quadrituberculato ; mandibulis gracilibus, porrectis, apicibus acutis, intus spinis 8 vel 9 minimis irregulariter dentatis.

Tibiis intermediis denticulo minimo instructis, posticisque inermibus. Tarsis subsetosis.

Long. corp. lin. 9 ; mandib. lin. 5.

Coll. Parry, etiam Mus. Brit.

Cladognathus flavidus, ♂, *Parry* (*var. max.*, ♀ *ignota*).

C. castaneus ; mandibulis, capite, thorace, suturaque nigro-marginatis ; mandibulis elongatis, subdepressis, intus quadridentatis, dente ante apicem obtuso, dente medio elongato subtrigono. Tibiis anticis posticisque inermibus.

Long. corp. unc. 1, lin. 6 ; mandib. lin. 5.

Hab. Ind. Or. Coll. Parry.

Cladognathus elegans, ♂, *Parry* (♀ *ignota*).

C. cinnamomeus, gracilis ; mandibulis capite paulo longioribus, arcuatis, depressis, ante apicem dente truncato instructis ; capite antice fortiter emarginato. Elytris punctatis, subtiliter striatis, sutura fuscata.

Long. corp. (mandib. incl.) lin. 8.

Hab. Ind. Or. Coll. Parry.

Cladognathus squamilateris, ♂, *Parry* (*var. minor*, ♀ *ignota*).

C. fusco-niger, nitens, subparallelus ; mandibulis brevibus irregulariter minute dentatis. Elytrorum prothoracisque marginibus lateralibus pilis cinereis tectis. Tibiis quatuor posticis inermibus.

Long. corp. (mandib. incl.), unc. 1.

Hab. Borneo. Coll. Parry, Wallace, et Saunders.

Cladognathus ? politus, ♂, *Parry* (♀ *ignota*).

C. castaneo-fuscus, nitidus ; mandibulis brevibus, curvatis, dentibus tribus armatis ; capite supra oculos angulato. Elytris glaberrimis, sutura late nigro-fusca. Tibiis anticis denticulatis, quatuor posticis unispinosis.

Long. corp. unc. 1, lin. 4 ; mandib. lin. 4.

Hab. Ind. Or.

Cladognathus pulverosus, ♂, *Parry* (*var. max.*)

?C. sericeus, ♀, *Westw. Tr. Ent. Soc.* vol. iv. 274, pl. 20, f. 3.

C. fuscus, pilis squamiformibus flavo-cinereis densissime tectus ; mandibulis porrectis, intus bidentatis, dente apicali ante furcato ; capite transverso, antice emarginato, et pone oculos tuberculo conico instructo. Tibiis anticis sublente irregulariter denticulatis, quatuor posticis inermibus. Tarsis subtus ciliatis.

Long. corp. unc. 1 ; mandib. lin. 4.

Hab. Malacca et Borneo.

Cladognathus bisignatus, *Parry*.

C. niger, subæneus, glaberrimus ; mandibulis brevibus, in medio unidentatis. Elytris singulis ad apicem macula (♀) aut striga (♂) fulva notatis ; femoribus intermediis et posticis fulvo maculatis.

Long. corp. (mandib. incl.) lin. 10.

Hab. Ind. Or. (Cherra Pounga, Ponjee ?). Coll. Parry.

Cladognathus fulvonotatus, ♂, *Parry* (*var. max.*, ♀ *ignota*).

C. nigro-brunneus, æneo tinctus. Prothorace lateribus fulvo bimaculatis. Elytris dorso valde politis, linea fulva pone humerum fere ad apicem ducta notatis.

Long. corp. lin. 10. Mandib. lin. 4.

Hab. Ind. Or. (Cherra Pounga, Ponjee ?). Coll. Parry.

Cladognathus perplexus, ♂, *Parry* (*var. minor*, ♀ *ignota*).

C. rufocastaneus, sublente minute punctatus, marginibus suturaque nigrescentibus ; mandibulis brevibus, apicibus acutis, margiuibus internis intus sex-dentatis.

Long. corp. (mandib. incl.) unc. 1.

Hab. Ind. Or. Coll. Parry.

Cyclommatus* æneomicans, *Parry*.

Lucanus metallifer ? (*var. minor*), *Boisd. Voy. Astrolabe*, pl. 6, f. 20.

Mas.—C. glabratus, fulvo-æneo nitens, sublente punctatus. Clypeo concavo triangulari; capite emarginato, sub vertice depresso, supra oculos angulato ; mandibulis falcatis, subdepressis, capite thoraceque paulo longioribus, denticulis parvis plurimis subapicalibus intus armatis. Elytris subparallelis. Femoribus supra fulvo striatis. Tibiis inermibus.

Long. corp. unc. 1 ; mandib. lin. 4½.

Fœm.—C. fusco-brunneus, rugoso-punctatus, æneo tinctus, subtus æneus; mandibulis brevibus, infra et supra unidentatis. Clypeo parvo rotundato. Prothorace transverso, lateribus infra emarginatis. Elytris elongatis, subparallelis ; femoribus supra ut in maribus fulvo striatis. Tibiis quatuor posticis unidentatis.

Long. corp. (mandib. incl.) lin. 10.

Hab. Batchian (♂, ♀). Coll. Wallace.

Cyclommatus insignis, ♂, *Parry* (*var. med.*)

C. fusco-æneus, supra et infra griseo squamosus ; capite supra triangulariter depresso, margine antico deflexo. Clypeo parvo, conico; mandibulis capite paulo longior-

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* In a paper (read before the Society on the 1st of December, 1862) upon Mr. Thomson's 'Catalogue of Lucanidæ,' the sub-genus Cyclommatus was proposed by Major Parry in lieu of Cyclophthalmus, *Hope*, the latter name having been employed by Sternberg for a genus of Arachnidæ.

ibus, denticulis parvis subapicalibus intus armatis, et prope basin denticulo binodoso instructis. Prothorace capite angustiori, lateribus infra in medio paulo angulatis. Elytris subparallelis, quadrisulcatis, humeris subproductis. Tibiis anticis obsolete unidentatis, posticis inermibus.

Long. corp. lin. 10; mandib. lin. 4.

Hab. Oriente.

Cyclorasis subnitens, ♂, *Parry* (♀ *ignota*).

C. glaberrimus, cinnamomeus, minute punctulatus; mandibulis brevibus, subrecurvis, intus obtuse 6 vel 7 denticulatis, apice subfurcatis; capite supra oculos angulato.

Long. corp. (mandib. incl.) lin. 9.

Hab. Ind. Or. Coll. Parry.

Psalidostomus Fryi, ♂, *Parry* (*var. max.* ♀ *ignota*).

P. niger; thorace elytrisque pilis cinereis brevibus adspersis; capite antice subemarginato et elevato, supra oculos oblique truncato; mandibulis gracilibus, porrectis, leviter falcatis, intus irregulariter dentatis. Prothorace transverso, antice angustato et dense aureo-fulvo ciliato, angulis posticis valde acutis. Scutello pilis aureo-fulvis tecto. Tibiis anticis tridentatis, posticis inermibus.

Long. corp. unc. 1, lin. 2; mandib. lin. 7.

Hab. Braz. Prov. Cantagallo (specimen unicum). Coll. Dom. Fry.

Psalidostomus rotundatus, ♂, *Parry* (♀ *ignota*).

P. ferrugineus, nigro marginatus; capite magno, lateribus pone oculos unituberculatis; mandibulis brevibus, curvatis, apicibus furcatis, medio supra dente valido armatis. Prothorace capite latiori, angulis posticis obliquis. Elytris brevibus, paulo convexis. Tibiis anticis extus serrulatis, intermediis spina minuta armatis, posticis inermibus.

Long. corp. lin. 6; mandib. lin. fere 2.

Hab. Amer. Merid. (Braz. ?). Coll. Mus. Berl. et Parry.

Dorcus derelictus, ♀, *Parry* (♂ *ignota*).

D. elongatus, niger, nitidus; capite inter oculos bituberculato; mandibulis obsolete unidentatis. Elytris lævissimis, subparallelis. Tibiis posterioribus extus subcurvatis, inermibus.

Long. corp. (mandib. incl.), unc. 1, lin. 5.

Hab. Ind. Or. Himalaya. Coll. Parry.

Ægus platyodon, ♂, *Parry* (*var. max.*)

Æ. niger, parum nitidus; mandibulis falcatis, ad basin dente magno trifido armatis; capite magno, transverso, antice medio profunde emarginato. Elytris punctato-striatis. Scutello sparsim et fortiter punctato. Tibiis anticis serratis, denticulis 6 aut 7 armatis; intermediis 4—5, posticisque 2 spinis minimis instructis.

Long. corp. lin. 13; mandib. lin. 4.

Hab. Gilolo. Coll. Wallace, Saunders, Parry.

ÆGUS? TRILOBATUS, ♂, *Parry*.

Æ. nigro-fuscus; capite, prothorace, elytrorumque marginibus, fusco-ferrugineis, hirsutis; mandibulis brevibus gracilibus, intus ad basin unidentatis; capite obscure punctato, lateribus pone oculos emarginatis. Prothorace capite latiori, rude punctato, lateribus singulariter trilobatis. Elytris ovalibus, in medio latioribus, nitidis, profunde striatis, apice subproducto. Pedibus hirsutis. Tibiis anticis minute denticulatis, posticisque inermibus.

Long. corp. (mandib. incl.) lin. 6.

Hab. Borneo. Coll. Parry.

FIGULUS MONILIFER, *Parry*.

F. elongatus, niger, lævigatus; capite in medio excavato, valde punctato; mandibulis unidentatis. Thorace antice in medio tuberculato, dorso sulco abbreviato rude punctato. Elytris humeris antice porrectis, trisulcatis, sulco 1o suturali seriatim tuberculato, 2do et 3io lateribus punctatis, secundo valde abbreviato. Tibiis anticis extus 5-dentatis, quatuor posticis unidentatis.

Long. corp. (mandib. incl.), lin. 6.

Hab. Nov. Zeal. Coll. Parry.

FIGULUS MODESTUS, *Parry*.

F. parvus, niger; prothorace in medio sulcato, antice tuberculato, lateribus punctatis. Elytris profunde striatis, striis grosse punctatis, humeris subproductis. Antennis pedibusque rufo-piceis.

Long. corp. (mandib. incl.), lin. 4.

Hab. Nov. Zeal. Coll. Parry.

FIGULUS SCARITIFORMIS, *Parry*.

F. parvulus, rufo-piceus; capite grosse punctato. Prothorace lævigato, lateribus vage et rude punctato, medio canaliculato, canaliculo punctato. Elytris profunde striatis; striis punctatis, apice subproducto.

Long. corp. (mandib. incl.), lin. $3\frac{1}{2}$.

Hab. Malacca. Coll. Parry.

New Part of the 'Transactions.'

Part 4 of vol. i. (third series) of the 'Transactions' of the Society, being the fourth and last part for the year 1862, was announced as ready for distribution among the Members and Subscribers.

January 5, 1863.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—'Proceedings of the Royal Society,' vol. xii. No. 52; presented by the Society. 'Naturhistorisk Tidsskrift,' stiftet af Henrik Kroyer, udgivet af Prof. J. C. Schiödte, Tredie Rackkes andet Hefte; by the Editor. 'Exotic Butterflies,' part 45; by W. Wilson Saunders, Esq. 'A Manual of European Butterflies; by the Author, W. F. Kirby, Esq. 'The Intellectual Observer,' Nos. 11 and 12; by the publishers, Messrs. Groombridge and Sons. 'The Zoologist' for January; by the Editor. 'The Athenæum' for November and December; by the Editor. 'The Journal of the Society of Arts' for December; by the Society. 'The Entomologist's Annual' for 1863; by the Editor, H. T. Stainton, Esq. 'Sitzungsberichte der k. bayer. Akad. der Wissenschaften zu München,' 1862, I. Heft 4, II. Heft. 1; by the Society.

Exhibitions.

Mr. W. W. Saunders, after making some remarks on the importance, from a commercial point of view, of a more intimate acquaintance with the various kinds of galls and their fabricators, exhibited specimens of a gall found at Reigate on the roots of the oak, and of another similar but larger root-gall recently brought from the Zulu country by Mr. Cooper: they appeared to be the production of several successive years, and formed in fact an assemblage of galls upon galls, leading to the hypothesis that the perfect insect laid its eggs within the galls of one year, and the produce of those eggs produced the galls of the following year. Mr. Saunders also exhibited another gall from South Africa which was rather soft to the touch, and was found in clusters upon a species of Cissus; it was doubtless the production of a Cynips, though the insect had not been discovered.

Mr. Saunders also exhibited living specimens of a species of Bruchus from the seeds of Erythrina Saundersonii.

Professor Westwood exhibited a large tough pouch-like larva-nest from Africa, which had been cut off from the branch of a tree to which it had been attached. The tough interior material had several holes in it, which were covered exteriorly with cone-shaped masses of woolly matter; these were evidently door-ways for the exit of the larvæ, but it was difficult to imagine that a larva which had once emerged could again effect an entrance through the same passage. The nest was doubtless that of some gregarious Lepidopterous larva, and was somewhat analogous to that of Eucheira socialis described many years ago by the Professor in the 'Transactions' of the Society. Professor Westwood also exhibited the leaves of various plants which had been mined by the larvæ of Micro-Lepidoptera, mounted on glass, with the larvæ inside their mines. This novel method of exhibiting the miners, and the shape and peculiarities of their workings, was due to Mr. S. Stone, of Brighthampton.

Mr. S. Stevens exhibited a fine Psalidognathus from Quito, and a remarkable instance of arrested development in one of the hind wings of a specimen of Papilio Pammon, brought by Mr. A. R. Wallace from the Sulu Islands.

Mr. J. Fenn exhibited an unusual variety of Ellopia fasciaria.

Mr. Stainton exhibited several remarkable varieties of well-known species of Lepidoptera from the collection of Mr. W. H. Bibbs, of Worcester, including Vanessa Urticæ, V. Atalanta, Arge Galathea, Arctia Caja, Eriogaster lanestris, &c.

Mr. Percy Wormald exhibited a specimen of Limnephilus nobilis of Kolenati, a Trichopterous insect new to Britain, which had been captured at Ruislip, Middlesex, on the 29th of September, 1862.

Sir John Hearsey exhibited a collection of thirty-two species of Sphingidæ from India.

Papers read.

Mr. W. W. Saunders read a further paper on the genus Catascopus, and gave descriptions of seven new species, from Mr. A. R. Wallace's collection, under the names of C. Wallacei, C. versicolor, C. ruficollis, C. lævipennis, C. elongatus, C. punctipennis and C. æneus. Specimens of these, with other species of the genus, were exhibited to the Meeting.

Mr. Waterhouse read some "Notes on Omalium riparium, *Thoms.*, Homalota lævana, *Muls.*, *Kr.*, H. dilaticornis, *Krautz*, and H. nigritula." Specimens of these species were exhibited to the Meeting.

Mr. Walker communicated a paper entitled "Characters of Undescribed South-African Lepidoptera-Heterocera, in the collection of W. S. M. D'Urban, Esq."

Major Parry communicated a paper entitled "A few Observations upon Lucanus Lama, *Oliv.*, and its Synonymy."

The President read some "Observations on Ants of Equatorial Africa," containing a criticism of some of the statements of M. Du Chaillu with respect to the ants of that region.

Mr. W. F. Kirby read a paper "On the Geographical Distribution of European Rhopalocera," in which the author expressed himself as an adherent to the Darwinian theory of the origin and development of species.

Annual General Meeting.

January 26, 1863.

Frederick Smith, Esq., President, in the chair.

An Abstract of the Treasurer's Accounts for 1862, and the Annual Report of the Council on the general concerns of the Society, were read.

The following gentlemen were elected Members of the Council for the ensuing year. Messrs. Dunning, Grut, Sir John Hearsey, M'Lachlan, Pascoe, W. W. Saunders, E. Shepherd, F. Smith, Stainton, S. Stevens, Waterhouse, J. J. Weir and Professor Westwood.

The following Officers were then elected for the ensuing year. Mr. F. Smith, President; Mr. S. Stevens, Treasurer; Messrs. Shepherd and Dunning, Secretaries; Mr. Janson, Curator.

The President delivered an Address on the present state of the Society, in which he reviewed the *acta entomologica* of the past year.

Mr. Stainton proposed, Professor Westwood seconded, and the Meeting unanimously carried, a vote of thanks to the President for his conduct in the chair during his year of office, and in particular for the Address which he had just delivered. The vote was accompanied by a request that the President would allow the Address to be published in the 'Journal of Proceedings.'

The President returned thanks to the Society for the vote just passed, and also for re-electing him to the Presidential chair.

A vote of thanks to the Treasurer, Secretaries, and the retiring Members of the Council, for their services during the past year, was also carried unanimously, and was acknowledged by Messrs. Stevens, Dunning and Lubbock respectively.

Report of the Council for 1862.

In accordance with the Bye-Laws the Council begs to present the following Report.

In the first place we congratulate the Society upon the good attendance of Members and the interest attaching to the proceedings at our Monthly Meetings. Whether viewed with reference to the number of visitors from all parts who have honoured us with their presence, the objects exhibited, the papers read, the discussions thereupon, or the amount of valuable information disseminated, we think that the year last past will bear comparison with any of its predecessors.

We rejoice to say that, notwithstanding many resignations which the Council cannot but deplore, the number of those composing the Society has slightly increased since the last Anniversary. We have lost by resignation five Members and seven Subscribers; we have also lost one Member by death. On the other hand we have elected ten new Members and four new Subscribers, thus making a total of fourteen added in lieu of thirteen removed.

And here, perhaps, it may not be out of place to allude to the loss which Entomology has sustained by the death of two gentlemen, each of whom had filled our Presidential chair. On the first constitution of this Society the Rev. F. W. Hope was appointed Treasurer and one of our Vice-Presidents. The latter office he filled for many years, and for four years he was our President. It is not necessary to remind you in detail of the services he rendered to Science, but we cannot refrain from a reference to that crowning act of his munificence which placed his entire collection at the disposal of the University of Oxford, and instituted the Professorship of Zoology which is so worthily filled, on its founder's nomination, by our colleague Professor Westwood. As long as Oxford endures, so long will the name of Hope be inseparably connected with the study of Natural History; and we trust that a school of natural philosophers will be nurtured in that ancient seat of learning, whose scientific achievements will not only do honour to their founder's memory, but will also maintain, and, if possible, elevate, the position of our countrymen among the naturalists of the world.

The other loss to which we have referred is that of John Curtis, the author of the 'British Entomology,' the plates of which are universally acknowledged to have been executed with such exceeding and life-like accuracy of detail as to have secured for their author a permanent position in the ranks of scientific investigators. It is now several years since Mr. Curtis's connexion with this Society ceased. His devotion to Science cost him his eye-sight; death has now closed his career of darkness, and opened to him the gates of never ending light.

The Council has received from the Library and Cabinet Committee its Annual Report. The Library generally is in good condition, has received many additions, chiefly as donations, and its advantages have during the past year been utilized by Members to an extent hitherto unprecedented.

No addition has been made to any of the Collections. But on the other hand some progress has been made in the re-arrangement of the Coleoptera, and the Council is now in a position to ask the assistance of Members in supplying the wants of the Society's collection from the superabundance of their own. The Cabinet is now ready for the reception of a complete collection of the British species of Coleoptera; but in

rearranging the Society's specimens, those whose condition is imperfect are being discarded, and the result is that many even of our commonest species are totally unrepresented. The Society's collection ought to be a good one, and, if it continue to exist at all, ought to be made better than it is. The present is a favourable moment for invoking the assistance of our Coleopterists. It must not be forgotten that a Society like this has a position to maintain and duties to perform. One of such duties surely is to lend a helping hand to those who need assistance and encouragement in the pursuit of that branch of Science which is specially committed to our care. To enable us properly to perform this duty, our predecessors have thought that the Society ought to possess a collection of the Entomological products at least of our own country. It is only by the liberality of individual collectors that our corporate collection can be maintained, and we venture therefore to appeal most earnestly to those who have the opportunity of collecting, and at this moment we appeal more especially to the Coleopterists, to make such donations of specimens as it may be in their power to bestow. We are not asking for unique specimens or those of extreme rarity; we ask only that each will contribute such as he may have in duplicate and in good condition, available for the purposes of study and scientific examination, that by this means the collection may be made a greater credit to the Society, and more in correspondence with the state of entomological knowledge in this country.

We turn now to finance. The Society will have learnt from the Abstract of the Treasurer's Accounts which has been read this evening that the cash balance in hand has during the past year been reduced, or in other words the payments for 1862 have exceeded the receipts, by £76 5*s*. 3*d*. Our present assets are £34 8*s*. 4*d*. in hand, and £109 14*s*. 9*d*. three per cent. Consols.

The Council feels that some explanation of this is necessary; and at the outset we beg to state that this excess of expenditure over income has been deliberately and designedly incurred; we have not drifted into extravagance unawares. A Society well established and influentially supported, whose numbers are large and the annual contribution high, may very reasonably seek to lay by some portion of its annual income; but a Society whose whole income is derived from single guineas, and they not over abundant, cannot afford to hoard its funds or starve the present generation for the sake of the next. A Society must, by a liberal use of the means at its disposal, first establish for itself a certain position before it can afford to save. We are of opinion that for a body situated like ourselves, it is neither necessary, nor at present desirable, that a large surplus should be retained; *some* reserve-fund must of course be kept to provide against unforeseen emergencies, but the amount thus unproductive should be kept within narrow limits, and should not exceed the probable requirements of the case. Nothing will so much conduce to the interests of the Society, and ultimately to its pecuniary advantage, as a judicious liberality in the use of our present resources. In plain terms, if we wish to advance the Society we must give our present Members and Subscribers as much as we can for their money.

That an ill-timed parsimony is in the end the most expensive policy has been forcibly brought to our notice during the past year. Our predecessors, either from an economy rendered necessary by the then state of the finances, or induced perhaps by the excusable, but (as we think) the mistaken desire, of showing at all cost a large balance in hand, have cast upon us liabilities which we have now to meet. To effect a temporary saving then of the price of printing a few more copies of the plates for the 'Transactions,' a ten-fold expense is thrown upon us now, which *must* be incurred

before the stock of our publications can be made available for sale. A policy like this is not compensated for by the small additions which it makes to the reserve-fund, and we trust that when we have escaped from the incubus that now presses upon us no such *damnosa hæreditas* as that to which we have referred will be left to our successors. Part of the necessary outlay for completing the plates required for the past volumes of the 'Transactions,' has been already defrayed; the rest remains to be provided, and we consider it proper to state openly to the Society that if it be your pleasure to re-elect the retiring Officers we shall think it right to pursue the policy of last year, and still further to reduce the balance in hand in order to meet the extraordinary expenses which as above mentioned have been cast upon us, and so to leave the current income to supply the current wants of the Society.

But the liabilities already alluded to are not the only set of arrears with which we have had to deal. The largest item in our expenditure for 1862 (amounting altogether to £172 9*s*. 10*d*.) is for printing and illustrating new parts of the 'Transactions' and 'Journal of Proceedings.' Besides producing a general index to the five volumes composing the second series of the 'Transactions' and 'Proceedings,' a third series has been commenced, and four parts of the first volume have appeared during the year. Those parts contain no less than thirty separate papers, extending over 416 pages and illustrated by 13 plates, and the 'Proceedings' comprise 96 pages. We may mention that the previous volume (1859-61) included only twenty-eight papers, extending over 420 pages. It appears, therefore, that during 1862 the Society has published as much as it did during the three previous years all put together; and not only has the quantity increased, but we believe that the quality has not deteriorated, and that the volume in question, both in the value and variety of its contents, may well vie with any of its forerunners. We have in fact published in one year the papers which were read during two years, and this of course has materially increased our outgoings. We trust, however, that the Society will be of opinion that the course adopted was judicious; we cannot but think it desirable that papers should be published as soon as possible after they are read to the Society; the authors themselves will more readily favour us with further communications, others will be more likely to become authors, the readers of the 'Transactions' get their information earlier, and the Society itself has a better claim to regard, as the promulgator of the latest scientific views, rather than the tardy distributor of stale intelligence. We rejoice to inform the Meeting that the whole mass of arrears has now been published; and, in fact, papers which were read at the Ordinary Meeting for this present month are now in type, and will in February be ready for your perusal.

Another event of unfrequent occurrence and calling for passing notice has been the revision of the Bye-Laws. The changes introduced were not of a very sweeping or extensive character. The constitution as amended in 1855 worked well in nearly all its details, and the Council trusts that the further amendments of 1862 will ensure to the Society at least a *septennium* of uninterrupted harmony and ever-increasing prosperity.

January 26, 1863.

THE PRESIDENT'S ADDRESS.

GENTLEMEN,

Custom has established it as a duty on the part of the President of this Society that at its Anniversary Meeting he shall lay before the Members a brief account of the proceedings of the Society during the past year. With this duty I have great pleasure in complying, because I think we have reason for congratulation, as well on account of the prosperity of the Society as on account of the progress that has been made in the Science we cultivate. In the first place, then, I will make a few observations on the present state of the Society; secondly, I will endeavour to educe from this statement what are its future prospects; and, lastly, I will take a glance at what has been done towards the advancement of Entomology by the publication of memoirs, &c., which have appeared in the various periodicals in this country during the past year.

First, then, as regards our own Society. An important alteration has been made in the laws which regulate our proceedings: until the present Anniversary the office of Curator has been of a more permanent character than it will probably prove to be under the new regulation; the election to that office will now be of annual occurrence, instead of, as heretofore, by the appointment of the Council in the first instance, and by, as it were, an annual confirmation of the same by the report of the Library and Cabinet Committee. There can be no doubt that annual election has many advantages: we all know how apt we are to become lax in our duties when in snug possession, and although no such charge can be brought against Mr. Janson, who has ably fulfilled the duties of Curator for so long a period, still it may possibly hereafter be found to be a salutary remedy in the case of a less active and energetic Curator.

Report of the Library and Cabinet Committee.

The Report of the Library and Cabinet Committee is in many respects very satisfactory. You have heard that the Library is in good condition, and that considerable additions have been made to it during the past year, principally through the very liberal presentations that have been made to us. It is also very satisfactory to find that we are in a condition to make a grant of money out of our surplus for the purpose of binding some of the more important works, which, in an unbound state, are much less available for purposes of study or reference: for these purposes I am happy to find the Members of the Society are availing themselves of the Library to a much greater extent than heretofore.

The next item in the report has excited my own, and I feel assured it has also your astonishment and regret: to me it appears quite unaccountable. This is the passage I allude to :—"No addition has been made to any of the collections during the past year." Had no part of our collections been in a state of arrangement I could well have understood it, but this cannot be said of the order Lepidoptera; and it has been well known, as regards our collection of Coleoptera, that that order was in process of arrangement in accordance with Mr. Waterhouse's Catalogue. In my opinion, if the Entomological Society determines upon having a collection of British Insects, that collection should stand unrivalled for completeness; whereas it is a lamentable fact, that, as regards the collection of Coleoptera, a tyro of two years' standing would be ashamed of it; and I fear the Lepidoptera, with the exception of a few rarities scattered amongst its ranks, will not stand a comparison with the private collection of any Member of this Society. Surely this cannot be generally known. I cannot but believe that every Member of this Society will hold the opinion which I have stated to be my own,—that the best, the most complete collection of British insects, ought to be found in the Museum of the Entomological Society of London. Is that the opinion of my brother Members? If so, let cabinets be prepared for the reception of all the Orders of insects, and let us try earnestly, and with an unflinching determination, to attain an end so desirable. For my own part, I will supply every species of aculeate Hymenoptera of which I possess more than a single example; if others will join in a similar manner in the endeavour to attain so desirable an end, I feel assured that, twelvemonths hence, we shall have made immense progress in the work.

In making these observations I cannot but feel that it may be the opinion of the majority of the Members of this Society that it were better to limit our acquisitions to books alone, that the possession of a first-rate library should be our aim, and that a collection of insects is not of importance, since every Member, or at least nearly so, forms a private collection of his own of the particular Order to which he principally devotes his study. However this may be, I am quite satisfied in my own mind, that this Society would be far better off without a collection, than with that which is now called the Collection of British Insects of the Entomological Society of London, and which, in its present condition, can only be considered a reproach.

The Society's Finances.

Although the Auditors' Abstract of Accounts shows an increase in our expenses during the past year, and that such expenses have exceeded those of 1861 by the sum of £52 13*s.* 6*d.*, still, when this is known to have arisen entirely from our having published five parts of the 'Transactions,' some of them unusually large, and thus, by one vigorous effort, cleared away all the accumulated arrears of Papers, I feel confident the Members will not think the Council have been imprudently lavish. I have no doubt the result will prove the additional outlay to have been a wise economy. Our present liabilities are not a pound more than they were last year, and we have still a balance in hand independent of our funded capital.

I am much gratified by being able to report to you, that during the past year we have elected ten Members and four Subscribers, an increase which certainly indicates the spread of entomological Science. Our losses, I regret to find, have been very great, more I fear than have occurred for many years; this is, however, attributable to circumstances which, let us hope, will not again occur to sow disunion amongst our ranks. Let us learn under all circumstances to act in strict accordance with the laws of our Society; and although it may happen that a majority of the members hold opinions at variance with our own, let us constantly bear in mind that we have bound ourselves to be governed by the majority on all occasions, and have attested our determination to do so by subscribing our names in the signature-book of the Society.

Obituary.

During the past year Entomology has lost its most illustrious illustrator: John Curtis, Esq., died on the 6th day of October, 1862, in the 71st year of his age. Mr. Curtis was only for a short time a

Member of this Society. He was elected President in 1855, but in consequence of the rapid failure of his sight he was compelled entirely to relinquish his favourite pursuits, and consequently resigned at the end of that year. The most eminent oculists in Europe were consulted, but in vain; the overtaxed organs had lost their functions, and within a few months of the time when he ceased to be a Member of this Society almost total blindness ensued. A few particulars of Mr. Curtis's life, obtained from his widow, will I trust prove acceptable and interesting to my brother Members.

Mr. Curtis was born at Norwich in 1791. From his earliest years he evinced a love for natural objects; his first attachment was to flowers, his mother being a great cultivator of them. At the age of four he was deprived of a father's care, his education consequently devolving on his mother, who sent him at that age to school at Norwich. At this time he had acquired considerable proficiency in drawing flowers, and had also commenced to form a collection of butterflies. At school he met with kindred spirits, and in company with them made excursions to Mousehold Heath and Horning Fen in search of rarities; at the latter place, he told me, he first saw Papilio Machaon alive. His success on his various excursions to these localities inspired in him a love for entomological pursuits that remained unabated through life.

At the age of sixteen he was placed in the office of a solicitor, but law had no charms for him, for, as he observed, while he was engrossing parchment, Entomology was engrossing his mind, and at the expiration of two years he quitted an employment so uncongenial to his taste. About this time he became acquainted with Mr. Simon Wilkin, the possessor of a fine collection of insects. With this gentleman he resided some time as Curator, assisting in arranging and augmenting his collection. Mr. Wilkin's collection was consulted by most of the eminent entomologists of the day, so that Mr. Curtis very early in life became acquainted with most of the living celebrities. Mr. Kirby was a frequent visitor, as well as Messrs. Hooker, Lindley and Sparshall.* By this time he had become a very competent draughtsman, since, in addition to his practice in drawing insects and flowers, he received instruction in drawing landscapes from the now eminent, but then little estimated, master, Old Crome of Norwich. Every lover of landscape who visited the late Great Exhibition must

* Mr. Wilkin died at Hampstead on the 28th of July, 1862, in the 72nd year of his age.

have been charmed with that noble English landscape, Mousehold Heath near Norwich. There were five or six other pictures by this master, which will never be forgotten by lovers of landscape beauty who were fortunate enough to discover them amidst the overwhelming amount of talent displayed upon the walls of the British division of Art, in the late Exhibition. Curtis, then, as he himself told me, had the advantage of such a master as Old Crome; but notwithstanding his progress as a draughtsman, he resolved, in addition, to obtain instruction in the art of etching, having at that time formed a resolution, should opportunity offer, of illustrating the British genera of insects. The first etchings which were published of Mr. Curtis's entomological plates were those which illustrate Kirby and Spence's 'Introduction to Entomology;' these were followed by a set of plates, executed from his own drawings, illustrative of Kirby's famous 'Century of Insects.'

In 1819 Mr. Curtis came to London, and, as the friend of Mr. Kirby, was soon introduced to Sir Joseph Banks, Dr. Leach, and all the leading scientific men of the day; his talents as an entomological draughtsman soon led to engagements with the Linnean, Horticultural, and other Societies. At this period he resolved to embark in his long-cherished attempt to illustrate the Genera of British Insects, and in 1824 the first part of his 'British Entomology' appeared. This great work occupied sixteen years of his life, and formed the same number of volumes; and it may be mentioned as a proof of the untiring zeal and faithful adherence to his contract with his subscribers,—to produce a part regularly at stated intervals,—that not in a single instance did he fail to produce the part on the promised day of publication. Every entomologist must be familiar with the exquisite plates which illustrate these sixteen volumes, and on all hands I feel assured they will be pronounced to be unsurpassed by any entomological illustrations in existence; but every one is not familiar with the 769 exquisite drawings from which the plates were engraved. Were I to express my own appreciation of them as an artist, I fear it would be estimated as the exaggerated praise of an enthusiast: I will content myself by saying that I have never seen any entomological drawings that would stand a comparison with them; they are "beautiful exceedingly." It is to be hoped that this collection of drawings will be deposited in some public institution in this country, since upon them will the fame of Curtis, as an entomological draughtsman, stand secure; and it would be a circumstance of deep regret to every entomologist, should they be eventually deposited in a foreign country.

During the progress of the 'British Entomology,' Mr. Curtis frequently contributed illustrated papers to various 'Transactions,' magazines, &c. In the 'Transactions of the Linnean Society' will be found a valuable paper on the insects collected by Captain King on the coast of South America, and also a paper, illustrated by one of his exquisite plates, on the insects collected by Captain Ross in the Arctic regions. His contributions to the 'Gardener's Chronicle,' on insects injurious to Agriculture and the produce of the garden, amounted to about 120 papers; these are signed "Ruricola." Perhaps the most valuable results of his scientific investigations are to be found in the series of "Reports on the Economy of Insects obnoxious to the Farmer and Gardener;" these, as you are aware, were published in the 'Journal of the Royal Agricultural Society;' they were sixteen in number, and were illustrated by a series of plates engraved by myself from the beautiful drawings of the author of the papers.

You are all aware that we have too frequently to regret the jealousies that arise between brother naturalists, and how often the friendship of years is broken by some untoward clashing of professional interests. In the life of Mr. Curtis such an event took place, and severed for many years two of the most eminent entomologists of those days. It is, however, a satisfaction to know, that some time previous to the death of Mr. James Francis Stephens, a reconciliation between them took place; and it was no uncommon circumstance to see them both in the insect room at the British Museum discussing entomological matters in friendly communion. All jealousies and bitterness, if any such remained, were buried by Mr. Curtis long before his death; let his good report alone live after him.

It now becomes my duty to record the loss which this Society has sustained in one of its oldest Members, John Walton, Esq., F.L.S., of Knaresborough, Yorkshire.

Mr. Walton was born at Knaresborough, on the 23rd of July, 1784. On the completion of his education he was placed in the counting-house of his uncle, a sugar refiner, in Rupert Street, Whitechapel, whom he ultimately succeeded in that business. At an early period of his residence in London he became a member of the Mathematical Society of Spitalfields, in which he studied the Sciences of Chemistry and Botany with much assiduity, especially the former, which he applied practically to the refinement of sugar, with great success and pecuniary advantage. In 1832, finding his long-continued

and arduous exertions had considerably undermined his constitution, he determined upon retiring altogether from business. This he was able to do with an ample fortune, and to seek, in change of scene and peaceful retirement, the means of restoring his somewhat overtaxed constitution. For this purpose he located himself and family for some months at the pleasant little village of Mickleham. Mr. Walton soon found the benefit of this change, and quickly regained his health and strength. His naturally active mind impelled him irresistibly to active pursuits, and in Entomology he found a new and agreeable excitement. His first entomological studies led him to the formation of a collection of Lepidoptera. Norbury Park being in the immediate neighbourhood of his residence, we find him, in the company of Dr. Bowerbank and Mr. Hoyer, collecting moths on the yew berries: this he has recorded in the 'Entomological Magazine.' In 1833, at the same locality, he reaped a plentiful harvest, devoting five hours every night for twenty-eight nights in succession. A list of his captures was published, including many species which at that time were of great rarity. Lepidoptera, however, only engaged his attention in part; Coleoptera were sought after with equal assiduity, and shortly afterwards entirely engrossed his attention. About 1837 Mr. Walton appears to have commenced his investigations of the family of the Curculionidæ, and in 1838 the first results appeared in a paper entitled "Notes on Sitones, Polydrosus, Phyllobius and Apion." Every collection in the metropolis, likely to contain any species of his now favourite family, was most carefully examined. With the Linnean and Banksian collections he soon became perfectly familiar. He entered into correspondence with Schönherr, Dr. Germar, M. Chevrolat, &c., forwarding to each series of British examples, and receiving from them types of their species, together with a large amount of other valuable information.

In the February part of the 'Annals and Magazine of Natural History,' 1844, the first paper on Curculionidæ published in that journal appeared; it contained a revision of the nomenclature of the genus Rhynchites. All Mr. Walton's subsequent papers on Curculionidæ appeared in the same journal; a paper on the genus Bruchus and the first portion of the genus Apion were published during the same year. In 1845 two papers, concluding the revision of the genus Apion, appeared. In 1846 the genera Cneorhinus, Strophosomus, Sitones, Polydrosus and Phyllobius were revised, whilst in 1847 the genera Trachyphlœus, Omias and Otiorhynchus underwent revision. In 1848 his task was resumed with increased

energy, and the genera Tropiphorus, Procas, Phytonomus, Pissodes, Erirhinus and Anthonomus were published. In 1851 only one short paper appeared, a revision of the genera Dorytomus and Ellescus. In 1852 his last paper on the family was published; it is intituled "Descriptions of two new British Genera belonging to the family Curculionidæ."

Thus we find that out of the eighty-eight genera of Rhyncophora found in this country, Mr. Walton published a revision of twenty-three, accompanied with his interesting and valuable observations. In 1856 Mr. Walton presented a copy of his private synonymic list to the British Museum for publication.

In order to appreciate the value of Mr. Walton's labours on the Curculionidæ it is only necessary to compare the state of the genera and species, as they appear in Stephens' 'Manual of British Coleoptera,' with the revised list. Those only who had the good fortune to be intimately acquainted with Mr. Walton in his study, and also in the field, can appreciate the enthusiastic ardour which he brought to bear in the investigation of the difficult family he had selected for his study. From earliest spring to the latest days of autumn, for several years in succession, he devoted himself exclusively to the collection of this family, whilst in the examination of a species he never rested satisfied if he fancied the possibility of a doubt remained; whatever he did, he did thoroughly. A day in the fields with Mr. Walton was one on which no one could fail to add largely to his own stock of entomological knowledge; as he was indefatigable in his labours as a collector, he was equally liberal in the dispensation of information as well as of specimens among his brother entomologists. He ultimately deposited the most valuable portion of his collection in the British Museum. He was for many years a Fellow of the Linnean Society, an old member of the Entomological Club, and a life member of this Society. By his brother contemporary entomologists his memory will ever be held in cherished remembrance. He died on the 3rd day of the present month at his native town, Knaresborough, in Yorkshire.

The British Museum.

The Society will be glad to learn that large additions have been made to the collections of the British Museum: 3272 specimens of Coleoptera, 1179 of Lepidoptera, 512 of Hymenoptera, 317 of Homoptera and Hemiptera, 54 of Diptera, and 199 of Arachnida have been added, making a total of 5533 specimens of insects added during the

last year; an ample proof of the fact, that the energetic keeper of the Zoological collections loses no opportunity of enriching the Entomological portion, as far as the funds granted to the department will allow. I have great pleasure in mentioning that Members of this Society, as well as other entomologists, have made liberal presents to the British Collection during the past year. 704 specimens have been presented by the following gentlemen: Messrs. Bond, Dale, Francis, Kirby, Lewis, M'Lachlan, Parfitt, Piffard, Reading, Rye, E. Smith, Stokes, Wormald, and the Rev. Hugh Stowell.

Meetings of the Society.

I am happy to report that the ordinary meetings of the Society have been exceedingly well attended during the past season. It were invidious, perhaps, to particularize any amongst a series of papers read before the Society, all of great excellence; but I wish briefly to mention one, and also publicly to express my regret to find a system with regard to priority of nomenclature — a system most unjust between brother entomologists—gaining ground amongst continental authors. Dr. Schaum considers it right to restore an older name should the description given at the time of its publication be such as would enable a competent entomologist to recognise it. The recognition of a species from a description, however, depends greatly upon the number of closely allied species by which it may be surrounded; under some circumstances a few words will prove amply sufficient, whilst under others it might require half an octavo page. But the system I condemn, not only as unjust, but totally indefensible, is the practice of using the names given by British entomologists, but quoting them from a more recent work as those of some continental Naturalist, and leaving unnoticed the name of the original author. A single example will explain my meaning: the Chrysis neglecta of Shuckard was well described by him in a monograph of the family, published in the 'Entomological Magazine' in 1837; it was also described by Dahlbom in the second volume of the 'Hymenoptera Europæa,' published in 1854, under the name of C. integrella. In M. Chevrier's recently published Monograph of the Chrysididæ the latter name is adopted for the species; and several similar instances occur in the same publication. Nothing can be more unjust, or tend more to the confusion of nomenclature. There are, however, several continental entomologists, honourable exceptions, whose conduct is not open to this remark, but they are only few among the many.

Entomological Works and Papers published in 1862.

During the past year the British Museum, has only published two catalogues of insects, parts 25 and 26 of Lepidoptera, by Mr. Walker; these finish the List of the Geometridæ.

The 'Entomologist's Annual,' which year by year becomes more interesting and valuable, contains information on species of nearly every Order of insects, a vast improvement upon some of the preceding volumes. English entomologists are greatly indebted to Dr. Hagen for the publication of his papers on the Neuroptera. His Synopsis of the British Phryganidæ has been the means of attracting the attention of some of our younger Members to these interesting insects, by placing at their command clear and full descriptions of the species, so far as they were discovered in this country at the time of the publication of his paper; the consequence has been, the discovery of additional new species to our Fauna. If a similar set of papers were published upon the orders Hemiptera and Homoptera, we should soon have a number of students investigating them. It is true, with regard to the Hemiptera, we are promised a Monograph on the British Species in the Ray Society's publications, and in the hands of Messrs. Douglas and Scott no doubt the work will be one of great excellence and utility; but I trust they will also give us a Monograph in a more portable and cheaper form, so as to place a manual of that Order in the hands of those who cannot afford to subscribe to the Ray Society. The 'Annual' as usual contains much interesting matter on the Lepidoptera by the Editor, H. Von Heinemann, and the Rev. H. Harpur Crewe. A few notes on Hymenoptera were contributed by myself. The most laborious, and at the same time exceedingly useful, paper is that upon the "New British Species of Coleoptera," with numerous corrections of nomenclature: we are much indebted to Mr. Rye for the complete and conscientious work he has placed before us. Having had some experience in making such emendations and descriptions I can only express my hope that this work was a labour of love. Mr. M'Lachlan has contributed an excellent paper, and a faithful chronicle of captures of Trichoptera, together with notes on British Neuroptera. Mr. John Scott has contributed a paper on British Hemiptera, describing two new species, and giving a list of species detected in Britain during the season; the latter amount to twenty-six species, a proof of what can be done when the attention of entomologists is directed to the observation of a hitherto much neglected order of insects.

In the 'Transactions' of this Society have appeared various papers by Messrs. Hewitson, Moore, Lubbock, Schaum, Verloren, Wollaston, Desvignes, Stainton, M'Lachlan, Smith, Walker, Waterhouse and Trimen, and these are illustrated by thirteen plates. You are too well acquainted with the subject of these papers to render it necessary for me to recapitulate them. All the papers have been read during the last two years, and so nearly have we now succeeded in printing all the communications in hand, that the complaint, so often made of papers being read and then shelved for years, may be said to be no longer applicable to this Society. For this we are mainly indebted to our able and energetic Secretary, Mr. Dunning.

The 'Zoologist,' as usual, contains a large amount of useful information, notices of localities for rare insects, modes of capture and habitats of insects, also valuable notices of appearances of species in great numbers, &c. I am also happy to find that our Member, Mr. J. W. May, favours us with a continuation of the "Life-Histories of Sawflies, translated from the Dutch of M. Snellen Van Vollenhoven." These truly scientific and valuable contributions are a great boon to English Hymenopterists, so few having any knowledge of the language in which the original papers are written. I would also mention a paper by Mr. Edwin Brown, "On the Plan upon which Bees and Wasps construct their Cells." The theory here announced, is, if I mistake not, that propounded by Mr. Waterhouse in the 'Penny Cyclopædia' not less, I believe, than twenty-five years ago. I will not trespass on your patience by reiterating my own views of this theory, having done so in various communications to this Society long ago, but I will call attention to one or two points. Mr. Brown says, "Every cell during its progress is impinged upon by six other cells, and, as all progress at the same time, produce inevitably the hexagonal structure." In order to prove that it is not necessary that a cell should be impinged upon by six others, I will refer Mr. Brown to the sixth plate that illustrates my 'Catalogue of the Vespidæ,' in which a faithful representation of a nest of Icaria guttatipennis is figured, showing six hexagonal cells standing in a row on the branch of a shrub. Again it is stated "It is only when another line of cells is in process of erection that the cells in the outer ring assume a hexagonal shape." This is true, but I possess portions of wasps' combs, or rather the beginnings of combs, in which perhaps twenty are completed, others being only just commenced at their base, the rest are carried up to their full height; but had the parent wasp or wasps, as the case might be, not intended to have extended the comb beyond that limit, I am

fully assured the outer walls would not have been carried up in angular planes of a hexagon, for in that case the form of the outer portion of the cells would be semicircular. But wasps not only build hexagonal cells, but sometimes, as is the case with a South-American species, Apoica pallida, they occasionally construct hexagonal combs. Beautiful examples of this form may be seen in the nest room at the British Museum.

In the twenty-third volume of the 'Transactions of the Linnean Society,' published in March last, will be found one of the most important contributions to the Science of Entomology that has perhaps appeared during the past year. It is entitled "Contributions to an Insect Fauna of the Amazon Valley," by Mr. H. W. Bates. The personal observations of the author, in a country that may not inaptly be called the Metropolis of the insect world, must be of the highest interest to every entomologist. The subject of mimetic resemblances, or mimicry of species, amongst the Heliconiidæ brought before the reader is deeply interesting, and the deductions which Mr. Bates has drawn from these remarkable instances are equally startling and conclusive. I would strongly recommend those who have not perused this paper to do so; it abounds in passages of the deepest interest.

Of the 'Journal of Entomology' two parts have appeared during the year 1862. They contain papers by Messrs. Bates, Pascoe, Smith, Walker, Wollaston and the Rev. Hamlet Clark; they are illustrated by seven beautiful plates. These parts conclude the first volume of the work, and I think I may say that there are few volumes, if any, that have appeared in this country on the Science of Entomology on which English entomologists have more reason to congratulate themselves; the work is entirely that of Members of this Society.

'A Manual of European Butterflies,' by Mr. W. F. Kirby, has appeared during the past year. Great care has evidently been bestowed upon this little work, the result being, in the opinion of one of our best Lepidopterists, a work of much promise, showing that the author possesses a competent knowledge of his subject.

I have thus taken a rapid survey of some of the more important events that have transpired during the past year, and have briefly enumerated the various periodicals published in this country in which entomological papers have appeared; I fear the list will be found far from being complete. I have left to others, who now regularly publish a complete register of Entomological publications, the task which

they execute far better than I could, even if the whole of my time were at my own disposal. I have only to thank you for your kind attention, and to express my earnest wish that Entomological Science may continue to advance, and that the prosperity of this Society may continue to increase from year to year.

Abstract of the Treasurer's Accounts for 1862.

RECEIPTS.

	£	s.	d.
By Balance in hand January 1st, 1862	122	6	4
Arrears of Subscriptions	7	7	0
Subscriptions for 1862 (97)	101	17	0
Admission Fees	14	14	0
Composition (1)	15	15	0
Tea Subscriptions	7	10	0
Sale of Transactions at Rooms £14 17 8			
„ at Longmans' 26 5 1			
	41	2	9
Cash of Mr. Wollaston for Plates, &c.	5	0	0
One Year's Dividend on £109 14*s.* 3 ₱ Cent. Consols	3	5	10
	£318	17	11

PAYMENTS.

	£	s.	d.
To paid arrears for 1861:—Rent to Christmas 11 5 0			
Wilkinson for Plates 5 13 9			
Standish for Colouring 0 13 6			
Postman's Christmas Box 0 2 6			
Bright for Cleaning Lamps 1 6 6			
Dunn for Oil 1 8 6			
	20	9	9
Insurance to Lady-day, 1863	2	10	0
Curator for attendance	18	4	0
Tea, thirteen Meetings	13	13	0
Attendance, Coals, &c.	2	7	0
Parcels, Postage, Stationery, &c.	9	8	7
Christmas-boxes, &c.	0	12	6
Printing Transactions, five Parts	128	14	0
„ Proceedings, &c.	11	2	6
Engraving Plates	11	11	6
Colouring Do.	21	1	10
Binding Books	3	3	0
Papering Drawers	1	1	0
Arranging Collection	10	0	0
Collector's Commission	0	10	6
Books Purchased	5	5	6
Three Quarters' Rent to Michaelmas	33	15	0
Balance in Treasurer's hands	25	8	3
	£318	17	11

Liabilities and Assets of the Society.

Liabilities.

	£	s.	d.
Rent to Christmas	11	5	0
Mr. Yates for printing Plates	3	13	9
Messrs. Day for Plates	0	12	6
Mr. James for Printing	1	10	0
Carpenter for Book-shelves...	4	18	8
	£21	19	11

Assets.

	£	s.	d.
Arrears of Subscriptions	21	0	0
Ditto doubtful £21 0 0			
Donation, W. W. Saunders, Esq.	10	0	0
Balance in hand	25	8	3
	£56	8	3
Less amount due at Christmas.....	21	19	11
True Balance in Cash	£34	8	4
And in 3 ℔ Cent. Cons.	£109	14	0

JOURNAL OF THE PROCEEDINGS

OF THE

ENTOMOLOGICAL SOCIETY OF LONDON.

1863.

February 2, 1863.

Frederick Smith, Esq., President, in the chair.

The President nominated as Vice-Presidents for the present year Messrs. Pascoe, Waterhouse and Grut.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—'Bulletin de la Société Impériale des Naturalistes de Moscou,' 1861, Parts i. to iv. inclusive; presented by the Society. 'Tijdschrift voor Entomologie,' Ve deel, 4e & 5e stuk; by the Entomological Society of the Netherlands. 'The Journal of Entomology,' No. 7; by the Proprietors. 'The Intellectual Observer,' No. 13; by Messrs. Groombridge & Sons. 'The Canadian Naturalist,' Vol. viii. No. 5; by the Natural History Society of Montreal. 'Sitzungsberichte der Königl. bayer. Akademie der Wissenschaften zu München,' 1862, ii. Heft ii.; by the Academy. 'The Zoologist' for February; by the Editor. 'The Journal of the Society of Arts' for January; by the Society. 'The Athenæum' for January; by the Editor. A specimen of Synuchus nivalis, "found under stones" near Reigate; presented by T. E. Hughes, Esq.

New Members.

Frederic Moore, Esq., and Edward Alfred Smith, Esq., were elected Members. A certificate was read in favour of Edward Parfitt, Esq., as an Annual Subscriber.

Exhibitions, &c.

The Secretary exhibited a box of "manna" from Tasmania, which had been anonymously sent to the Society, accompanied by a bottle which contained numerous specimens of a Hemipterous insect of the genus Eurymela, and which was labelled as

follows:—"The insect which causes the manna to be formed on the white gum trees, by perforating the delicate young branches, for the purpose of feeding on the sap."

Mr. Bond exhibited a remarkable instance of arrested development in the left fore wing of a specimen of Colias Hyale; also a female specimen of Lycæna Adonis, in which some of the eye-like markings on the under surface were on the left side (*i.e.* right of the under surface) wholly wanting.

Mr. Haward exhibited a miscellaneous collection of Coleoptera, collected by himself three or four years ago in Central Europe, principally in Southern France and Germany, and in Switzerland and North Italy.

Mr. Stainton exhibited two bramble leaves, inside each of which was visible the cast-off skin of a larva of Nepticula aurella, and read the following note by Mr. C. Healy:—

Observations on the Moulting of the Larva of Nepticula aurella.

"On the 18th of January, 1863, I collected several bramble leaves containing young larvæ; in the afternoon of the same day I observed one larva resting in the centre of its mine in an apparently sickly state. On the following morning the old skin had split at the first segment, and the darkish blotch at the back of the head had receded to the second segment. On the 20th the old skin had shrunk to the fifth segment, and at this date the whole of the first four segments had quite a transparent appearance, being devoid of all markings whatever, and contrasting strangely with the remainder of the larva's body; the larva lay quite motionless in its mine. On the 21st the mouth had regained its former brownish colour, and the larva now moved its head about in a languid manner in search of food, of which it partook sparingly. On the 22nd the darkish blotch had reappeared on the back of the larva's head; the old skin in the meanwhile having shrunk still lower down, the anterior portion of the body had now become much stouter and had a more healthy and fresher appearance; the larva now commenced feeding with great eagerness: at this period the dorsal vessel, which had lately become more distinct at the fore and after part of the larva's body, was quite hidden in the centre. On the 23rd the whole of the dorsal vessel was distinctly visible, the anterior portion being of a much brighter green than the posterior."

Professor Westwood exhibited drawings sent from Australia by Dr. Howitt, of two species of Lucanidæ; one was the species recently described by the Professor as Rys-sonotus? jugularis; the other, the original of which was found in Gipps' Land, was probably the male of Dorcus Pelorides, of which the female was in the British Museum.

Professor Westwood also called attention to a paper in the 'Tijdschrift voor Entomologie,' by Prof. Van der Hoeven, upon Periphyllus Testudo, a Hemipterous insect which always remained in an apterous state; and to a paper on the Insects of Ceylon, by M. Motschulsky, in the Bull. de la Soc. Imp. des Nat. de Moscou.

Mr. Waterhouse exhibited British specimens of the following species of Homalota which are not included in his 'Catalogue:'—

1. Homalota velox, *Kraatz*. One specimen taken by Mr. Waterhouse at Brockenhurst, in the New Forest, and a specimen taken by Mr. Hislop in Scotland.
2. Homalota flavipes, *Thomson*. Found on the banks of the Thames and Medway, at Gravesend and near Strood.
3. Homalota gemina, *Erichson*. From the Hammersmith Marshes.

4. Homalota vilis, *Erichson*.

5. Homalota picipes, *Thomson*. Atheta picipes, *Thoms. Skandinav. Coleopt.* iii. 81, 30. H. fusco-femorata, *Waterh. MSS.*

6. Homalota angusticollis, *Thomson*, *Ofv. af. Vet. Ac. Förh.* 1856, 100, 22. Atheta angusticollis, *Thoms. Skandinav. Coleopt.* iii. 87, 38.

The following notes, having reference to some of the above-mentioned species, were communicated to the Meeting :—

" Homalota vilis, *Erichs.*, and H. picipes, *Thoms.* Of each of these two species I have seen but a single specimen. The insects were captured (by myself, I believe), long since, but their localities were not noted down. Of course with such scanty material I should wish my determinations to be looked upon with some doubt. As there already existed a species of Homalota bearing the name 'picipes' before Thomson applied the name to the insect above noticed, I have substituted the name 'fusco-femorata' for this insect.

" Homalota flavipes = Halobrectha flavipes, *Thoms.*= Homalota maritima, *Waterh. MSS.*, and a nearly allied species H. puncticeps, *Thoms.* More than four years since in examining my specimens of Homalota I distinguished two species as belonging to Dr. Kraatz's third section of this genus, both of which are found under *rejectamenta* on our sea-shores, and both are remarkable for having the head strongly punctured. They have, moreover, the fore parts of the body pretty densely clothed with pubescence. One of these insects is extremely like H. occulta, but has smaller antennæ. It is black, and has the antennæ, palpi and legs more or less piceous; the antennæ without any perceptible paler colouring at the base; the legs, with the tarsi, the knees, and the tips of the tibiæ, usually more or less testaceous. The head is very nearly equal in width (and indeed in total bulk) to the thorax, the sides subparallel, and with the eyes small and not prominent; the upper surface convex, thickly and distinctly punctured, the crown presenting usually a more or less distinct fovea (perhaps in the male sex only). Thorax subquadrate, very little broader than long, the hinder part distinctly rounded; the sides (which are furnished with two or three setæ) parallel and very indistinctly rounded; the surface thickly and distinctly punctured; in some specimens (males?) with a large oblong shallow fovea on the disk; in others a faint small fovea behind. Elytra depressed, about one-fourth broader than the thorax, and nearly half as long again (as in H. occulta), very densely crowded with punctures, and hence dull. Abdomen glossy, with the basal segments rather sparingly punctured; the fifth segment very sparingly, and the sixth almost impunctate; the apex more or less piceous. Posterior tarsi short.

" This insect is clearly the Homalota puncticeps of Thomson = Halobrectha puncticeps of his 'Skandinaviens Coleoptera,' iii. 49, 1.* It also agrees perfectly with a specimen from the shore of the Baltic, sent by Dr. Kraatz to the British Museum as his H. puncticeps. But it does not agree with the insect named by the same authority in my own collection, nor in that of Mr. Wollaston. The description given by Hardy of his H. Algæ evidently belongs to this species, but he notices a variety (" dilutiora, antennis fusco-ferrugineis, basi, ore, pedibus anoque testaceis ") which apparently is the insect next about to be noticed. The specimen alluded to by the same author as

* The original description, published by Thomson in the 'Transactions of the Academy of Sciences at Stockholm' for 1852, I have never been able to consult.

having a slight elevation on the sixth abdominal segment must present an abnormal condition of the part. I have seen no such rising in the specimens which have come under my notice.

"The Homalota anthracina of Fairmaire is referred by Dr. Kraatz and by its original describer to the present species, but with doubt; and certainly the description (especially the one published in the 'Faune Francaise') in many respects agrees with the H. puncticeps, but the form of the thorax (which is said to be 'presque aussi large que les élytres,' and 'très arrondis sur les côtes') would appear to be different. H. atricilla of Erichson has been identified with the present species. The description, as far as the colouring is concerned, might have been taken from a very immature specimen of the insect, but, in other respects, is for the most part so utterly at variance with the actual characters of the species that I cannot but believe that there is an error in the identification — that perhaps the so-called type-specimen has been transposed and wrongly labelled.

"The second species is well described by Thomson, under the name Halobrectha flavipes, in his 'Skandinaviens Coleoptera,' iii. 50, 2. I shall content myself with pointing out its distinguishing characters as compared with H. puncticeps. Its general colouring is less dark, being pitchy black; the elytra more inclining to piceous, and the abdomen black. The legs, antennæ, palpi and parts of the mouth testaceous; the terminal joint of the palpi, the apical half of the antennæ, and the femora and tibiæ, however, more or less tinted with fuscous. The antennæ are rather stouter. The head, thorax and elytra are less densely punctured, and hence less dull; the elytra are but little longer than the thorax, and the posterior tarsi are considerably more elongate. The apex of the abdomen is more or less rufescent. This species I formerly regarded as the H. puncticeps of Kraatz, and it stands under that name in my 'Catalogue.'

"Unless entomologists consent to adopt the minor subdivisions of the great genus Homalota proposed by Mr. Thomson it will be necessary to substitute some other specific name for the present insect, as there already exists one species of the genus bearing the name flavipes. I propose for it the name of maritima.

"H. angusticollis, *Thoms.* In the last edition of Schaum's Catalogue (1862), this insect appears as a distinct species in the third column of p. 24, but further on (first column of p. 25) the name reappears, and in this case is linked with that of H. ravilla, *Erichs.* I have a specimen before me of the last-named insect, sent by Dr. Kraatz to the British Museum, and likewise a specimen of H. angusticollis, received by Mr. Crotch from Thomson. With this material, it would appear that I was in a favourable position for determining whether the insects are identical or not. Both insects appear to me to be males. Thomson's specimen has the penultimate abdominal segment gently (but still evidently) emarginate, as the describer points out to be the case in the male of his species; and further this insect agrees perfectly with the two British specimens which I exhibit to the Society, excepting that in these latter the penultimate abdominal segment is more acuminate at the apex, and is truncated. These two specimens then, as I take it, furnish the opposite sex of H. angusticollis. They have the same structure of antennæ, with the terminal joint of moderate length; that is, as Thomson says, half as long again as the preceding joint. On the other hand, Erichson describes the terminal joint of the antennæ of H. ravilla, 'magno, ovato, precedente triplo fere longiore,' and such is the case in the insect received from Dr. Kraatz. This latter author, however, states that the terminal joint is equal in length to the two preceding joints taken together, so that I am left in uncertainty as

to whether the remarkably large terminal joint which I find in the specimen of H. ravilla is constant,—whether, in short, it may not be sexual. In this same specimen the penultimate segment of the abdomen is truncate or most indistinctly emarginate, and the truncated portion is broader than in the English specimens, which I regard as females of H. angusticollis. In other respects, I can discover no differences between the H. angusticollis and the H. ravilla."

Mr. Waterhouse then communicated the following note, and exhibited (on the part of his son, Mr. Charles Waterhouse) a series of specimens of a species of Homalota, closely resembling H. analis in its general characters, but which will possibly prove a distinct species:—

"The specimens were collected recently in the Hammersmith Marshes, in company with H. analis, and my attention was first directed to them through the uniform dark (nearly black) colouring of the body and antennæ. Upon examination, I find that the dark insects differ from H. analis in their sexual characters, the male having a very much deeper notch in the upper plate of the penultimate abdominal segment than in the corresponding sex of H. analis, whilst the female has the plate in question truncated at the apex. After the examination of a very large number of specimens of H. analis, I have not been able to detect any decided distinctions in the sexes through the structure of the penultimate abdominal segment; in all it has a largish notch at the extremity in the form of an obtuse-angled triangle; in some the notch is slightly deeper than in others, but there are individuals presenting intermediate conditions. In the penultimate abdominal segment of the darker-coloured insect, the sinus of the upper plate has its depth slightly exceeding its width; the sides are subparallel, diverging but indistinctly, and the innermost half is nearly semicircular, or we may compare the sinus to the outline of a bluntly terminated cone. The edges of the segment bordering the sinus are margined,—*i.e.* there is a delicate impressed line immediately within the margin. In H. analis the triangular notch does not show a corresponding impressed line: here the plate is slightly arched, but in the transverse direction only; whilst in the deeply notched segment of the other insect the lateral portions are curved downwards. The apex of this segment is tinted with piceous in both sexes, but I have seen no specimens in which the entire segment is testaceous, as is generally the case in H. analis. The antennæ are dusky, often to the base, but sometimes the two basal joints show a dusky testaceous tint in parts, especially on the under side and at the base."

With respect to this communication, Mr. Waterhouse made the following remarks:—

"The Homalota soror of Kraatz (Nat. der Ins. Deutschl. p. 257), we are informed, is very closely allied to H. analis, but is distinguished by the antennæ being darker and a little more incrassated towards the apex; by the palpi being pitchy brown; the thorax and elytra blackish; the abdomen almost as thickly, but much more finely punctured, and uniformly black. The male has, in the upper plate of the penultimate abdominal segment, a still larger triangular notch,* the margins of the plate on either side of

* "Noch weiter dreieckig ausgeschnitten." I am not sure that I have rendered this sentence accurately. Both H. analis and H. soror, according to Dr. Kraatz, have a triangular notch or emargination to the abdominal segment in the male, and, as I understand the matter, the segment is still more notched in the latter species than in the former; the term "weiter" cannot be translated simply as "deeper," nor as "wider," but its sense would be conveyed by the two latter terms combined.

the notch falling off more obliquely. In the insect exhibited I do not perceive the differences in the punctuation alluded to, nor those in the structure of the antennæ.

"Again, a species of Homalota is distinguished from H. analis by Thomson (see his 'Skandinaviens Coleoptera,' ii. 294), under the name Amischa platycephala, by having the abdominal plate in the male deeply emarginate, and in the female truncate, so far agreeing with our insect. But A. platycephala is said to be broader than H. analis, less convex, and with the fovea on the thorax obsolete; the antennæ testaceous at the base, and the elytra obscure testaceous,—distinctions which do not exist in the insect before the Society. I still think it possible that it may be identical both with H. soror and A. platycephala. Thomson says of his species that it is scarce in North Scania, and Kraatz simply informs us that the H. soror was taken by him near Bonn, and he makes no mention of the female. It is probable then that neither of these authors had ample material for arriving at the characters of the species, and that, under more favourable circumstances, their descriptions might have been modified. However this may be, this note is communicated to the Society with the view of eliciting further information respecting those species which are certainly most closely allied to H. analis. The last-mentioned species I have collected in great numbers in various localities, but, amongst eighty specimens roughly grouped together in my unexamined collection of species of Homalota, I do not appear to possess a single specimen corresponding with the insect from the Hammersmith Marshes, of which my son found and exhibits two dozen specimens, presenting an equal number of males and females. The species then would appear to be very local."

Paper read.

Mr. M'Lachlan read a paper on Anisocentropus, a new genus of exotic Trichoptera; descriptions were given of five species of that genus, *viz.*, A. illustris, n. sp. (of which specimens were exhibited), A. dilucidus, n. sp., A. immunis, n. sp., A. latifascia, *Walk.*, and A. pyraloides, *Walk.* To these was added the description of a new species of Dipseudopsis, D. collaris, from China.

March 2, 1863.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be returned to the respective donors:—'Proceedings of the Royal Society,' Vol. xii. No. 53; presented by the Society. 'Annales de la Société Entomologique de France,' 3me Série, Tomes 4, 5, 6, Années 1856, 1857, 1858; by the Entomological Society of France. 'Anatomie Physiologie et Histoire Naturelle des Galéodes;' by the Author, M. Léon Dufour. 'Wiener Entomologische Monatschrift,' Band vi.; by Herr Julius Lederer. 'Stettiner Entomologische Zeitung,' Jahrg. 23, Nos. 10—12, and Jahrg. 24, Nos. 1—3, and Beilage; by the Entomological Society of Stettin. 'The Canadian Naturalist and Geologist,' Vol. viii. No. 6; by the Natural Society of Montreal. 'The Zoologist' for March; by the Editor. 'The Journal of the Society of Arts' for February; by the Editor. 'The Intellectual Observer,' No. 14; by the Publishers. 'Jahrbücher des Vereins für Naturkunde im Herzogthum Nassau,' Bd. 14, 15, 16; by the Society. 'The Reader' for January and February; by the Editor.

Election of Subscriber.

Edward Parfitt, Esq., of the Devon and Exeter Institution, Exeter, was ballotted for and elected an Annual Subscriber to the Society.

Exhibitions, &c.

The Secretary read a letter from Mr. Abraham Edmunds, of the Tything, Worcester, correcting an error in the Report of the Meeting of the Society held on the 5th of January last: of the varieties of Lepidoptera exhibited by Mr. Stainton on that occasion, on behalf of the Rev. E. Horton, part only were the property of Mr. Bibbs; the Vanessa Atalanta, Arge Galathea, Arctia Caja and Eriogaster lanestris, belonged to and were captured by Mr. Edmunds.

Mr. Bond exhibited a specimen of Lycæna Dorylas, believed to have been captured in the West of England in 1862; two specimens had been sent to Mr. Bond as varieties of L. Adonis, having been taken, in ignorance of their specific distinctness, out of a large number of insects belonging to Mr. W. Farren, of Cambridge.

Mr. Waterhouse exhibited certain British species of the genus Mycetoporus, with the view of correcting an error into which he had fallen, that of confounding the M. longulus with M. lepidus. Mr. Waterhouse observed, "When I formerly examined the British Mycetopori, in order to determine and catalogue the species, I possessed only old specimens, not in a favourable condition for displaying their characters; but I have now before me not only a series of fresh and well-preserved British specimens of both species, but likewise continental specimens forwarded to the British Museum by Dr. Kraatz. The M. longulus of Mannerheim, Erichson, Kraatz, &c., appears to be not uncommon in gravel and sand pits in the neighbourhood of London. In some respects it is intermediate in its characters between the M. splendens and the M. lepidus. In size and form, for example, it is intermediate. Its colouring resembles that of M. splendens, being black (if we except the pale legs and basal joint of the antennæ), with bright red elytra, in which the region of the scutellum and the lateral margins are dusky, but in other respects immaculate. It differs from this insect in being rather narrower; in having the antennæ longer and less stout, the four penultimate joints being less strongly transverse; in having two punctures, placed obliquely, on either side of the disk of the thorax; and in having the abdomen more thickly punctured. Most of my specimens of M. splendens have the abdomen entirely black above, but in some the edges of the segments are rufo-piceous. My specimens of M. longulus have the abdomen of a less pure black, being somewhat pitchy; and the edges of the segments, in all, are rufo-piceous.

"This insect differs from M. lepidus in having the sides of the body less parallel, the thorax being broader behind, and followed by broader elytra, and a more attenuated abdomen; the antennæ are rather longer, as are likewise the legs.

"In M. lepidus the colouring of the body is very variable, ranging from nearly uniform rufous to pitchy black; often it is pitchy, with the elytra more or less rufous at the base. Here the general colour of the thorax and elytra is generally the same, or very nearly so. In a long series of M. lepidus now before me, I do not find any specimens having uniformly bright red elytra, accompanied by a black thorax. It has two punctures on each side of the disk of the thorax, and sometimes three or four. On the apical half of each elytron may be seen usually two punctures in a faint stria situated between the sutural stria and the submesial one. In M. longulus these supplemental punctures on the elytra are often wanting.

"The Ischnopoda melanura of Stephens, which is given in my Catalogue as synonymous with Mycetoporus lepidus, should be transferred to the M. longulus, *Mannerh.*"

Mr. Waterhouse also exhibited the insect which stands as "Boletobius castaneus" in Messrs. Hardy and Bold's 'Catalogue of the Insects of Northumberland and Durham,' p. 107; it was regarded by Messrs. Hardy and Bold as identical with Megacronus castaneus of Stephens, but Mr. Waterhouse stated that, upon examination, he found it a perfectly distinct species. M. castaneus of Stephens' collection was certainly an immature specimen either of Boletobius analis or B. cingulatus; formerly he thought it was the latter, but upon re-examination he was inclined to regard it as the B. analis. The B. castaneus of Hardy and Bold, Mr. W. thought, would probably prove a species of Dr. Kraatz's genus Bryoporus, but as he was unable to examine the parts of the mouth, the maxillary palpi only being visible, he was left in doubt. The maxillary palpi were short and moderately stout, and the terminal joint but a trifle shorter than the preceding joint, and of an elongated conical form. This form of palpus was very distinct from the elongated slender maxillary palpi seen in the typical species of Boletobius (such as B. atricapillus, &c.); it approached more nearly, however, to that seen in species of the section Megacronus, *Steph.* (= Bolitobius, Sect. 1 of Kraatz), and could scarcely be said to differ from that of Bryoporus rufus. The insect was smaller and narrower than B. rufus; had shorter and stouter antennæ; and had the elytra impunctate, excepting the punctures in the ordinary discoidal stria, and that of the suture, in each of which there were but about five somewhat indistinct punctures. The head was short and nearly round, as in B. rufus and Mycetoporus splendens, and, indeed, in size, form, and proportions, it greatly resembled the last-mentioned insect, from which it differed chiefly in the greater development of the terminal joint of the maxillary palpi; in the antennæ being rather stouter, the basal joints shorter, more especially the second, fourth and fifth joints; the punctures on the striæ of the elytra fewer and less distinct; the abdomen less thickly punctured (the basal segment nearly impunctate); and, lastly, in the colouring, which was rufo-testaceous, with the head rufo-piceous, the abdomen pale castaneous, and the antennæ black, with the exception of the three basal joints. The above comparisons were made with Mr. Hardy's specimen, which that gentleman had forwarded for inspection.

Mr. Waterhouse also exhibited two specimens of a British species of Homalota, which had not hitherto been recorded in our lists; he regarded it as the H. oblonga of Erichson and Kraatz; one of his specimens was taken in the neighbourhood of London; the locality of the other had not been noted.

Papers read.

Prof. Westwood read "Descriptions of two new Australian Lucanidæ," under the names of Lucanus carbonarius and L. Howittanus.

The President read "Descriptions of Brazilian Honey-Bees belonging to the genera Melipona and Trigona, which were exhibited, with samples of their Honey and Wax, in the Brazilian Court of the International Exhibition of 1862."

New Part of Transactions.

Part 5 of Vol. i. (third series) of the 'Transactions,' being the first Part published in 1863, was on the table.

April 6, 1863.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be returned to the respective donors:—'Proceedings of the Royal Society,' Vol. xii. No. 54; presented by the Royal Society. 'Journal of the Proceedings of the Linnean Society,' Vol. vii. No. 25; by the Society. 'The Journal of the Royal Agricultural Society of England,' Vol. xxiv. Part. 1; by the Society. 'The Entomologist;' by James Bladon, Esq. 'Exotic Butterflies,' Part 46; by W. Wilson Saunders, Esq. 'The Zoologist' for April; by the Editor. 'The Intellectual Observer,' No. 15; by Messrs. Groombridge & Sons. 'The Journal of the Society of Arts' for March; by the Society. 'The Athenæum' for March; by the Editor. 'The Reader' for March; by the Editor. 'On the Composition of the Head, and on the Number of Abdominal Segments, in Insects;' by the Author, Dr. H. Schaum. 'Latreille, Familles Naturelles du Règne Animal;' by F. P. Pascoe, Esq.

Election of Honorary Members.

Professor Lacordaire, of Liège, Dr. Leconte, of Philadelphia, and Dr. Hagen, of Königsberg, were severally balloted for and elected Honorary Members.

Exhibitions, &c.

Sir John Hearsey exhibited a box of Indian Lepidoptera, all having ocelli on their wings.

Mr. Waterhouse exhibited a specimen of a new British species of Aleochara, from the collection of Mr. Jeakes; it was in all probability captured by Mr. Squire, but there was no note of its locality, further than that the specimen was a British one. The insect was as large as a middle-sized A. mœsta, and was most remarkable for the unusually long terminal joint of the antennæ, this joint being equal to the three preceding joints taken together. It was glossy black, and rather densely clothed with very pale ash-coloured pubescence, especially on the thorax and elytra; the legs, palpi and basal joints of the antennæ were pitchy, the terminal joint of the palpi and the tarsi testaceous. The head presented very fine and scattered punctures. The antennæ were longer and less stout than usual; the second and third joints considerably elongated, the third being a trifle longer than the second; the fourth joint fully as long as broad; from the fifth to the tenth joints there was no perceptible increase in the width, but those joints gradually became shorter, the tenth joint was, however, but slightly transverse; the much-elongated terminal joint was cylindrical, with the apex rounded. The thorax was finely but not very thickly punctured, and presented two or three delicate setæ at the sides. The elytra taken together were more than one-third broader than long, slightly tinted with piceous behind, thickly punctured and faintly rugulose on the inner side. The abdomen had the transverse grooves on the basal segments strongly and thickly punctured, and on the apical half of those segments, as well as on the terminal segments, were finer scattered punctures: the penultimate segment had the hinder margin rather indistinctly emarginate in the middle, and was

simple, not crenulated. Compared with A. mœsta, this insect differed in the following points:—the head was smaller; the antennæ longer and more slender; the thorax less convex, more contracted in front, and more delicately punctured; the abdomen not only differed in the strong and rather dense punctuation of the transverse groove of the basal segments, but this strong punctuation existed even on the basal portion of the fifth segment, which in A. mœsta has the corresponding part smooth. The legs were slender, as in the species last mentioned; in A. lanuginosa the legs are stouter, and the posterior tarsi are shorter and stouter. The Aleochara inconspicua of Aubé is described as having a remarkably long terminal joint to the antennæ in the male sex, and as having the transverse grooves in the abdominal segments strongly punctured, and so far agrees with the insect exhibited, but the latter was larger than the size indicated for A. inconspicua, and the penultimate abdominal segment was not crenulated; hence Mr. Waterhouse was not inclined to identify it with A. inconspicua without a note of doubt.

The President exhibited specimens of Claviger testaceus found near Purley and Croydon in the nests of Formica flava; they had readily sucked sugar and water supplied to them in blotting-paper, and he had hoped to have exhibited them alive, but all had unfortunately died before the hour of meeting. He had not been able to find the larva of Claviger; so far as his experience went C. testaceus was confined to the nests of Formica flava, but in the course of last year his son had found it at Folkestone in the nests of the common garden ant.

Mr. Haward had found it in the nests of both these ants, but more commonly in that of F. flava.

Mr. Lubbock requested entomologists to supply him with specimens of the larva or imago of Acronycta Psi and A. Tridens, as he was desirous of making experiments in breeding and interbreeding those species.

The Secretary read an extract from a letter from Mr. Roland Trimen, dated Cape Town, February 18, 1863, in the following words:—

"Is it known that Deilephila Livornica is a *day*-flyer? In December last I saw several specimens flying about a long hill-ridge in the hot mid-day sunshine, and captured one of them. One specimen was hovering about the blue flowers of a species of Echium."

The Secretary also read a letter received from Mr. C. A. Wilson (a Corresponding Member of the Society), dated Kensington, near Adelaide, January 27, 1863, in which the writer gave a brief account of the successful passage, over the continent, to the north-west coast and back, of the South Australian exploring party under Stuart. Two unsuccessful attempts had previously been made; and the successful party, consisting of ten persons, had endured great hardships from continued drought and the barrenness of the country. Mr. F. G. Waterhouse, one of the party, was about to publish his journal of the Natural History of the Expedition; but, considering the vast extent of country traversed, only a small number of objects of interest was found, most specimens being met with in the settled districts, or in places before partially known or explored. Mr. Wilson added that his own South Australian collection of insects numbered between 5000 and 6000 specimens, of which fully one-third were Coleoptera, and he was gradually adding to them those of other colonies.

Mr. Benjamin T. Lowne (who was present as a visitor) exhibited specimens of thirty-three species of ants from Port Jackson, Australia, which he had collected during October and November last. The collection was entirely made in the immediate neighbour-

hood of Sydney; and so far as he had then been able to ascertain, eighteen of the thirty-three species were undescribed. Mr. Lowne had also been able, by personal observation of the nests, to unite four reputed species into two; Formica agilis, *Sm.*, and F. intrepida, *Kirby*, were (as was long ago suspected by Mr. F. Smith), the large and small workers of one species; and F. detecta, *Smith*, received from Hunter's River, was the female of F. purpurea, *Sm.*, a species received from Melbourne, showing that this interesting ant was distributed over a wide range of three hundred geographical miles, in which the fauna and flora varied considerably. The communities of Formica purpurea formed a nest very similar to that of our F. rufa, but built with small fragments of stone; near Sydney, where dark iron stone formed their building material, the hill was composed entirely of it; but in the mountains, where the rock was white, they carefully covered their hill with minute fragments of charcoal, which was very abundant in the Australian bush, a proceeding probably adopted to increase the internal temperature of their nest. As a rule, the nests of the genus Formica in New South Wales were subterranean, but one species excavated the hard boles of several species of Encalyptus. The Australian Polyhachi did not, so far as Mr. Lowne's observations went, make a nest on leaves, like those of India, but excavated a domicile in the stumps of trees or under stones; whether those insects made any other nest at a later period in the year, he did not know. Crematogaster was a very numerous genus near Port Jackson, and, true to its character in Brazil and elsewhere, the species did not construct any nest, but lived under cracked bark and stones, or in the rotten stems of Xanthoreas. The Myrmecinæ were the most formidable looking of all the Australian genera, and armed with a sting which inflicted very severe but transitory pain. One species, M. nigrocincta, had the power of taking almost incredible leaps; it ran and leapt alternately, so that its progression was analogous to that of the Cicindelæ; although the ant was not more than an inch long, its leaps on ordinary occasions were about a foot in length, and when alarmed it had been seen by Mr. Lowne to leap a yard, rising a foot from the ground: he had been unable to discover anything in its structure to account for this remarkable power, which, however, was possessed by some other tropical ants.

Papers read.

The Secretary read a paper by Mr. Hewitson, entitled "Descriptions of two new Diurnal Lepidoptera;" they were described under the names of Papilio Birchallii and Morpho Alexandra.

The Secretary also read a paper by Mr. Roland Trimen, entitled "Descriptions of three new Species of Anthocharis, and a new Species of Pais, from Tropical South-Western Africa." They were described under the names of Anthocharis Regina, A. Phænon, A. Eosphorus, and Pais pulchra. Specimens of A. Regina and A. Eosphorus, which had been sent from Cape Town in a letter, were exhibited; A. Regina was a species of singular beauty, allied to A. Ione.

May 4, 1863.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—'The Transactions of the Linnean Society of London,' Vol. xxiii. Part III., Vol. xxiv. Part I.; presented by the Society. 'Bulletin de la Société Linnéenne de Normandie,' Vols. i.—vii., 1855—62; by the Society. 'Annales de la Société Entomologique de France,' 3e Serie, Vol. iii., Trim. 2—4, 1855; Vol. vii., Trim. 1—4, 1859; Vol. viii., Trim. 1—4, 1860; 4e Serie, Vol. i., Trim. 1—4, 1861; Vol. ii., Trim. 1—4, 1862; by the Society. 'Descriptions of Twenty New Species of Australian Coleoptera belonging to the Families Cicindelidæ and Cetoniidæ,' 'Descriptions of Twenty New Species of Buprestidæ belonging to the Genus Stigmodera, from the northern parts of Australia,' by William MacLeay, jun., Esq., M.L.A.; by the Author. 'The Intellectual Observer' for May; by the Publishers. 'The Zoologist' for May; by the Editor. 'The Journal of the Society of Arts' for April; by the Society. 'The Athenæum' for April; by the Editor. 'The Reader' for April; by the Editor. 'The Weekly Entomologist' for 1862—3; by the Editor. A Collection of upwards of 100 Volumes of Works on Bees and Bee-keeping; deposited in the Library by the Apiarian Society, on certain conditions embodied in a Minute of Council dated the 6th of April, 1863.

Exhibitions, &c.

Mr. S. Stevens exhibited a collection of insects from the Feejee Islands, consisting principally of Coleoptera, and comprising many new species; also a collection from Madagascar, sent home by Mr. Plant, containing Coleoptera and some fine Lepidoptera, conspicuous amongst which was a new Diadema; also a collection from the Cape of Good Hope, sent by Mr. Trimen; also some spiders of enormous size from Bogotà; and a single specimen of a Coleopterous insect received from Australia, which appeared to be precisely identical with the British Sinodendron cylindricum, and which, it was suggested, had probably in the larva state been imported into Australia from this country, in wood.

Mr. M'Lachlan exhibited the case of a caddis-worm (a species of Limnephilus), which was almost entirely composed of from 250 to 300 minute shells of a Planorbis, arranged with the utmost regularity, so as to resemble a piece of mosaic.

Mr. Edwin Shepherd exhibited specimens of Biston betularius, which had been raised from eggs forwarded to him from Lancashire by Mr. Edleston. In the course of last year Mr. Edleston had found a pair of that species *in copulâ*, one of the specimens being of the usual gray colour, and the other of the black variety occasionally found in the North of England: the eggs forwarded were the fruit of that union, and Mr. Shepherd had succeeded in breeding twelve specimens of the perfect moth; of these, eight were of the normal colour, and four of the negro variety; ten of the twelve were females, and of the two males one was of the typical form and the other was a negro. The whole of the larvæ were fed on the same food, principally on lime leaves. It was remarkable that the negro variety had never been captured in the South, and that even in the North no intermediate forms had ever been met with to connect and link together the light gray type and the sooty black variety.

Mr. Waring exhibited some dead pupæ of drones, which he had found near the mouth of one of his bee-hives: the pupæ had not quite arrived at maturity, and it would seem that the bees must have cut off the caps of the cells containing them, and have cast them out of the hive. He was unable to throw any light upon the cause of the death of the pupæ.

Mr. T. W. Wood made some remarks on the mimicry of Nature by herself, as exemplified by the colouring of the under side of the wings of Anthocharis Cardamines, and on the utility of such mimetic resemblances in the preservation of insects. During the present month of May, towards evening or in cloudy weather, the orange-tip butterfly might be found at rest in exposed situations by the sides of roads and lanes, on the tops of grass and flowers, but more particularly on Anthriscus sylvestris, and almost always in the neighbourhood of that plant: the chequered white and green, which alone were visible when the insect was at rest, exactly represented the small white flowers of the Anthriscus, as seen against the green background of the hedgerow behind. It was remarkable also that the butterfly did not appear to be partial to the Anthriscus, except as a secure resting-place, but preferred to hover over and suck the juices of the wild geranium and other flowers.

Mr. Waterhouse exhibited British specimens of Oxypoda lentula, *Erichs.*, *Kraatz*, &c., Oxypoda misella, *Kraatz*, Trechus obtusus, *Erichs.*, and Bembidium (Philochthus) Mannerheimii, *Sahlberg;* and read the following notes on those species:—

"1. The Oxypoda lentula is about equal in size to the Homalota Fungi, and has antennæ with very nearly the same proportions as to length and thickness, but the elytra and basal half of abdomen are rather narrower, and hence the general form is more inclining to the linear. The colouring is dullish slaty black, reminding one of the Myllænæ in this respect; the antennæ and legs are piceous, the knees and tarsi a little paler than the other parts; the punctuation of the upper parts is very fine and dense throughout, a little less dense on the head; and the insect is densely clothed with fine ashy pubescence. In certain lights the elytra exhibit an indistinct faint brownish tint, and the apex of the abdomen is more distinctly tinted with brown. The thorax has a pretty distinct transverse fovea behind, and running forwards from this is a faint dorsal channel, which, however, disappears near the front of the thorax. The basal joint of the posterior tarsi (which are but of moderate length) is equal in length to the two following joints, taken together; and joints two, three and four are very nearly equal to each other. I have taken this insect in the Hammersmith Marshes.

"2. Oxypoda misella belongs to the little section of the genus, the species of which have the elytra shorter than the thorax. Of this section but two British species have hitherto come under my notice, *viz.*, O. annularis of Mannerheim and O. brachyptera of Kirby = O. ferruginea of Erichson. The species regarded as O. misella now exhibited was taken near Wickham, by Mr. Rye, and was at once separated by him from the other two species above named, in company with which it was found, through its dark colouring combined with its comparatively short antennæ. In the structure of the antennæ it most nearly resembles O. annularis, the terminal joint being short (very little longer than broad), as in that insect, and the intermediate joints being strongly transverse; but these organs are rather less stout in O. misella than in O. annularis, and are of a dark pitch colour, excepting at the base. The insect, moreover, is rather smaller, and its general colour is pitchy; the thorax and elytra, apex of the

abdomen and the edges of the abdominal segments more or less rufous-piceous; the legs and base of the antennæ testaceous. O. annularis is entirely rufous-testaceous, with the exception of the head and middle of the abdomen, which are somewhat dusky. O. brachyptera is usually intermediate in its colouring between the above-mentioned two species; its antennæ, thorax, elytra, and the base and apex of the abdomen, are ferruginous. Here the antennæ, if bent backwards, would nearly extend to the apex of the elytra (the same organs would fall considerably short of the same point in the other two species); the intermediate joints are moderately transverse, and the terminal joint is fully twice as long as broad. The elytra are rather longer, and the punctuation is more distinct and somewhat rugulose, which is not the case in O. misella and O. annularis.

"3. Of the specimens of Trechus obtusus which are exhibited, one is from the Continent, having been kindly sent to me by Dr. Schaum; the second is British, and stood in my collection for many years under the MS. name 'lævis,' it having been so named by me and separated from the T. minutus, chiefly in consequence of the almost total obliteration of the striæ of the elytra. In the fifth volume of Stephens' 'Illustrations' (Mandibulata), and in the 'Manual' by the same author, an insect is very briefly described under the name 'T. lævis, *Waterh.*'; whether the description was taken from this specimen I am not aware, but as there is no insect in Stephens' collection to represent the species, the exhibited specimen is probably the original of the description. However this may be, it will be seen by the members present that the British specimen agrees perfectly with the continental one, and differs from T. minutus chiefly in having the elytra shorter, more convex, and of an ovate form, the broadest part being in the middle (whilst in T. minutus the elytra are broadest behind the middle), and the striæ of the elytra being all obliterated, or very nearly so, excepting the three nearest the suture. In T. minutus there are at least four distinct striæ on each elytron. The last-named insect, moreover, is provided with perfect wings, whilst in T. obtusus the wings are rudimentary.

"4. For Bembidium Mannerheimii, recently detected by Mr. Rye amongst our British species, I have a new locality to record; the specimens exhibited were taken by me at Darenth Wood."

The Secretary read a letter from Dr. Hagen, of Königsberg, in which, after thanking the Society for having elected him one of its Honorary Members, he expressed a hope that British entomologists would assist him in rendering more perfect his recently-published 'Bibliotheca Entomologica'; if the entomologists of this country would communicate to this Society every error or omission, with respect either to the authors or their works, which they noticed in the 'Bibliotheca,' and such additions as from time to time became necessary, and the Society would communicate the same to him (Dr. H.), he trusted that, by the assistance and co-operation of this and other Societies, which had been requested to do likewise, a future edition of his recent work might be made a good foundation for a complete and perfect record of entomological bibliography.

The President mentioned that Professor Lacordaire, of Liège, in a letter returning thanks for his election as an Honorary Member, had enclosed a photograph of himself, in the belief that this Society, like that of France and other scientific bodies, was forming a collection of likenesses of its members. The Council had taken the subject into consideration, and having regard to the regret which was now felt at the absence

of any such memorial of some of our distinguished entomologists (*e.g.*, the late James Francis Stephens), and to the interest which, after the lapse of a few years, would doubtless attach to such a collection, had determined to provide a proper book for the reception and preservation of photographs of such Members and Subscribers as would be kind enough to present their likenesses to the Society. He trusted that the existing Members of the body would readily respond to this invitation.

Special General Meeting.

The Secretary gave notice that a Special General Meeting would be held on Monday, the 1st of June, at 8 P.M. (or so soon thereafter as the business of the Ordinary Meeting should be concluded), to consider whether the Society's collection of British Insects should be retained or disposed of; and that at such Meeting Resolutions would be proposed with a view to carry into effect the recommendations to the Council, which were agreed to by the Library and Cabinet Committee at its meeting held on the 30th of March last.

June 1, 1863.

FREDERICK SMITH, Esq., President in the chair.

Donations.

The following donations were announced, and thanks voted to the respective donors:—'The Transactions of the Entomological Society of New South Wales,' Vol. i. Part 1; presented by the Society. 'Journal of the Proceedings of the Linnean Society,' Vol. vii. No. 26; by the Society. 'The Intellectual Observer,' No. xvii.; by the publishers. 'The Zoologist' for June; by the Editor. 'The Journal of the Society of Arts' for May; by the Society. 'The Reader' for May; by the Editor. 'Stettiner Entomologische Zeitung,' Vol. 24, Nos. 4—6; by the Entomological Society of Stettin.

Election of Member.

A certificate in favour of Alfred R. Wallace, Esq., as a Member of the Society was read. On the proposition of Mr. Dunning, seconded by Mr. Stainton, it was unanimously resolved that, as a slight recognition of the vast services rendered to Science by this distinguished entomologist, zoologist and traveller (and following the precedents afforded by the election of Mrs. F. W. Hope, and that of Mr. Tweedy in 1850), the customary two-months' suspension of the certificate in the meeting-room, and the formal vote by ballot, be dispensed with; and Mr. Wallace was accordingly elected by acclamation.

Exhibitions, &c.

Mr. Stainton exhibited some young Lepidopterous larvæ mining the leaves of the hazel. The same larva had been found in the leaves of Ribes sanguineum, and in the North of England in birch leaves. It retained the mining habit only for a short time, and subsequently became an external feeder. The larva was that of an Incurvaria, and would probably prove to be I. pectinea.

Mr. Stainton exhibited some dead larvæ of Hyponomeuta padella on apple leaves. They had been transferred, when quite young, from their natural food, the hawthorn, to an apple tree, which was the usual food of a closely-allied form: the transferred larvæ had at first commenced eating the apple leaves, but soon ceased to do so, and died, apparently for no other reason than that the food did not agree with them. This fact was adduced not only as an instance of inability on the part of the larvæ to adapt themselves to circumstances, but also as having a material bearing upon the question of the specific distinctness of the hawthorn-feeding and apple-feeding forms of Hyponomeuta.

Mr. S. Stevens exhibited some twigs of lime trees, gathered at Kennington, which had been completely stripped of their leaves (whole trees having shared the same fate) by the larvæ of a Tortrix, apparently belonging to the genus Lozotænia.

Mr. Bond exhibited three varieties of the male of Anthocharis Cardamines, a species but little liable to variation, all captured near London; and a hermaphrodite of the same species, also captured near London, and having female characters on the right side and male characters on the left side.

Mr. Bond also exhibited a hermaphrodite Papilio Machaon, from Whittlesea Mere, in which again the right side was of the female form and the left of the male form.

The President exhibited drawings of two hermaphrodite honey bees. In the first specimen the right side partook of the male characters, the antenna, eye, anterior leg and intermediate leg being male, and the wing and posterior leg being female or worker; the left side was entirely worker. The second specimen was partly male, partly worker; the antenna, eye, wing and legs, on the left side were all of the true male form, and the abdomen was considerably enlarged on the same side.

The President also exhibited specimens of Braula cæca, an insect which had been found on the Continent to be very destructive to honey in hives; it had only recently been imported into this country along with the Apis Ligustica, from a hive of which species the exhibited specimens had been taken.

Mr. Waterhouse exhibited British specimens of a species of Homalota, which, being apparently undescribed, he named and characterized as follows:—

HOMALOTA PLATYCEPHALA, *n. s.*

Hom. linearis, depressiuscula, parum nitida, fusco-nigra; elytris fusco-testaceis, basi fuscis; pedibus testaceis, femoribus fuscescentibus; capite subquadrato, fronte plano; thorace subquadrato, coleopteris angustiore, suprà leviter canaliculato, posticè latè foveolato; abdomine segmentis 4 primis crebrè punctulatis, segmento quinto parcius punctato, sexto fere lævigato. Long. $1\frac{3}{4}$ lin.

Mas. Abdominis segmento sexto dorsali tuberculo compresso munito.

In size, form, colouring, and in the structure of the antennæ, this species very closely resembles the Homalota gregaria; it, however, may be readily distinguished by the larger size of the head, and the subquadrate and depressed form of this part; the parts of the mouth being more produced, and the fifth abdominal segment being rather sparingly punctured. The male characters are moreover very different, nearly resembling those of H. sulcifrons, *Kirby* (H. pavens, *Erichs.*). From this insect H. platycephala differs in being smaller and narrower, in the form of the head, and in

having the anterior abdominal segments rather less thickly punctured, and the fifth segment somewhat sparingly punctured.

The head in bulk is very nearly equal to the thorax, and the part behind the antennæ is nearly square, but a trifle broader than long, and has the angles rounded; the upper surface is depressed, rather more so in the male than in the female, and has a faint longitudinal groove; the surface is most indistinctly punctured. The antennæ are uniformly fuscous, and when compared with those of H. gregaria present no appreciable difference. The thorax is nearly quadrate, but slightly contracted behind; it has a shallow transverse fovea behind, and a shallow longitudinal depression extends forwards from this to the middle of the thorax; in the male is a distinct dorsal channel, extending to the front of the thorax; the surface is very thickly and finely punctured. The elytra are but little longer than the thorax, but nearly one-third broader; they present scarcely any gloss, being very thickly and finely punctured, and having a correspondingly fine and dense pubescence; they are fuscous at the base, and gradually assume a paler hue towards the apex. The abdomen is glossy, sometimes pale at the apex. The legs are slender, as in H. gregaria, but rather longer. The tarsi are elongate, and in those of the hinder legs the first joint is pretty distinctly longer than the following three joints, as in the insect last mentioned, and which no doubt induced Erichson to describe it as a member of the genus Tachyusa.

The sixth abdominal segment in the male is furnished with a small laterally compressed tubercle, and the terminal segment has the middle portion of the upper plate produced and terminating in four denticles, of which the middle pair are approximated and most prominent; the external pair are slightly obtuse, and are separated by a deep nearly semicircular notch from a spine forming the outermost lateral boundary of the plate, and the apex of which terminates nearly on the same plane as the outer pair of denticles.

I possess five specimens of this species, four of which were taken in the corridor of the Crystal Palace, and the fifth was found by one of my sons in the court yard of the British Museum. Two of these are males: in one of the males, and in one female, the thorax presents on its disk a large and tolerably deep oblong impression, as is frequently seen in H. gregaria and some other species. In one specimen both thorax and elytra are palish brown, perhaps from immaturity.

Mr. M'Lachlan exhibited three new British species of Trichoptera, on which he read the following notes:—

"1. Hydropsyche ophthalmica, *Rambur*. Taken by myself, I believe between Kew and Richmond, and by Mr. Wormald at the same place. Readily distinguishable from all other described species by the large size of the eyes in the male, the vertex from this cause being almost quadrangular. Kindly determined for me by Dr. Hagen, who has seen Rambur's types.

"2. Philopotamus? columbina, *Pictet*. Taken by Mr. Wormald at Llangollen, North Wales, in September, 1862, and by myself near Bickleigh, Devon, in the same month. This is not a true Philopotamus, belonging to the same group as Hydropsyche occipitalis, *Pict.* (Apelocheira subaurata, *Steph.*), and closely allied to that species, but differing in its slightly smaller size and darker colour, and by the structure of the last abdominal segment in the male, there being a deep notch in the middle of the upper margin, which is absent in H. occipitalis.

"3. Psychomia (Homoecerus) derelicta (*n.s.*). I propose this name for an insect belonging to a rather obscure group, and which I cannot make out to have been previously described; a specimen sent to Dr. Hagen last year was returned as unknown to him. It belongs to a group mentioned by Dr. Hagen in the 'Stettiner Entomologische Zeitung' for 1860, p. 279, differing from the true Psychomiæ in the broader and more obtuse wings, in the more widely dilated intermediate legs of the female, and especially in the possession by that sex of a rather long and curved ovipositor; nevertheless Dr. Hagen thinks that the proper place of the group is with Psychomia. Kolenati, in the second part of the 'Genera et Species Trichopterorum,' places it as a subgenus of Tinodes, which he calls Homoecerus, a position it can scarcely retain, as the females of Tinodes have undilated intermediate legs. Kolenati describes four species under the names of (1) albipunctatus, *Steph.*, known to him only from description; the type of Stephens' species is a small Hydropsyche; (2) obscurus, *Steph.*, which cannot be Stephens' species, the type of which is a female of Glossosoma fimbriata, *Steph.*; (3) affinis, *Kolenati*, a new species, differing in the venation of the under wings; and (4) pusilla, *Fabricius*, of which I may say that what Fabricius' species really is must, I think, always remain conjectural: pusilla, *Stephens*, is a true Psychomia, and the same as his phæopa; pusilla, *Curtis*, is a small True Tinodes.

"I have drawn up the following diagnosis of the new species.

"Psychomia (Homoecerus) derelicta.

"Nigro-fusca; antennis saturate brunneis, testaceo annulatis; palpis brunneis; capite thorace abdomineque nigro-fuscis; oviducto testaceo-fusco, sursum incurvato; pedibus fuscis, vix testaceis; alis anticis fuligineo-fuscis, vix iridescentibus, dense pilosis; posticis fusco hyalinis. (*Fœm*).

"Long. corp. $1\frac{3}{4}$ lin.; exp. al. 5—6 lin.

"Of this I have seen five specimens, all of which are females. It has been taken by Mr. Parfitt near Exeter, by Mr. Fenn at Wallingford, by Mr. Barrett at Haslemere, in July, and by myself near Kew, in August. It is larger and darker than the other described species."

Mr. Stainton exhibited specimens of Tinea vivipara, *Scott*, and read the following notice of the habits of that species:—

"This insect has been described in the first part of the 'Transactions of the Entomological Society of New South Wales,' by the Hon. A. W. Scott, of Ash Island, Hexham, which is about seventy-five miles N.N.E. of Sydney. The specimens exhibited were captured by Mr. Diggles at Moreton Bay, which is three hundred miles further to the north. Its beauty is not the only interest which this elegant species possesses, for it appears from the observations of Mr. Scott that the females do not deposit eggs, but living larvæ.

"'It was after dark, in the early part of the month of October, 1861, that we first captured a specimen with the hand, being attracted at the moment by its elegant colouring, and wishing to secure it for the cabinet. Fearful that the plumage might be injured by the struggles of the moth while endeavouring to escape, it was gently compressed, and on opening the hand we observed numbers of minute but perfect larvæ being ejected from the abdomen in rapid succession, and moving about with considerable celerity, evidently in search of suitable shelter and food. This incident, so singular

and new to us, required further confirmation, and consequently many more of a similar kind (of course all females) were caught and attached to corks previously covered with black paper, and subjected to the closest scrutiny. These moths shortly commenced to deposit their living progeny with rapidity, the small white fleshy larvæ being seen with great distinctness on the black surface of the paper, thus affording clear and satisfactory proof that this insect—the only one of its order at present known to be so—is unquestionably ovo-viviparous, and will represent in future this peculiarity among the Lepidoptera, similarly to those few species existing in the hemipterous and dipterous orders.

" 'This fact having been ascertained our attention was incited to the care of the little strangers, and to procure suitable shelter and food for them, in the hope that we should be able to rear them, and thus to supply a correct account of their metamorphoses. In this we were guided by the form of the perfect insect, and accordingly placed before them grains of maize, pieces of flannel and woollen cloth, shreds of partially decayed paper, some fungus and lichen, and other materials known to be the food of caterpillars belonging to the genus Tinea and neighbouring genera. Unfortunately they turned with distaste from all these supplies, with the exception of the cloth and flannel, and even to these they attached themselves with reluctance. We, however, persevered, and put them in a dark and roomy box, aware of the marked dislike to light of larvæ possessing depredatory habits, and left them undisturbed for a week, at the end of which we were pleased to find that small silken tunnels or tubes had been constructed on the surface of the brown cloth, and that the denuded appearance of several places exhibited signs of their ravages. From this cloth they shortly afterwards transferred themselves to the flannel, where they fabricated small portable cases, composed of two separate pieces of an irregular oval form, joined at the sides, but leaving apertures at each end, and being thus comfortably housed we entertained sanguine hopes of rearing them. These hopes, however, were not to be realized, for towards the end of November (nearly two months from their birth) they ceased to thrive, and eventually all perished. * * * *

" 'As we failed in affording proper nourishment to the larvæ, we think it probable that they exist in their natural state upon decaying animal or vegetable matter, as found to be the case with the Sarcophaga carnaria (or common blowfly) and some others which produce their young in a living state.'—(Trans. Entom. Soc. of N. S. W. Vol. i. part 1).

"It will now be a problem for European Micro-lepidopterists to ascertain whether any of our European species of the genus Tinea have a similar habit. When Dr. Staudinger was in Spain he met with one larva of this genus (if I remember rightly) which fed on dry dung. Is it not possible that some species of the genus may feed on the freshly dropped dung of animals, and hence the larvæ require to be deposited in an active state? Many of the larvæ of the Tineæ of Europe are still unknown to us; possibly a clue is now furnished which may prove of service."

Mr. Stainton read the following:—

Notes on the 'Proceedings of the Entomological Society of Philadelphia.'

"I have before me the 'Proceedings of the Entomological Society of Philadelphia' from March, 1861, to the close of 1862, forming nine parts of variable bulk, and extending to 311 pages. These 'Proceedings' are well printed on good paper, and contain several memoirs of considerable importance, so that it is extremely desirable that the

existence of an Entomological Society on the other side of the Atlantic should be generally known to the entomologists of Europe.

"It does not appear from these 'Proceedings' when the Entomological Society of Philadelphia was first started. In the Report of the Secretary for 1861 we read that 'the cabinet was commenced in January, 1860,' which is fourteen months before the earliest meeting recorded on the second page of the 'Proceedings,' at which 'the Committee appointed to revise the Constitution and By-Laws prior to procuring a Charter made their final Report.' However, it appears from the by-laws that the common seal of the Society was to bear the words 'Founded 1859.' It is interesting at the very time when we are called upon to decide the question of the dispersion of our own collection to notice how energetically this young Society is engaged in the task of forming a collection. Thus we read that 'the contributions to the cabinet during the past year have been both numerous and valuable. In Coleoptera there is an increase of 520 species, 8885 specimens during the past year; in Lepidoptera an increase of 198 species, 2169 specimens; in Diptera an increase of 75 species, 235 specimens,' &c.; 'as a whole the interest manifested by the members in building up the collections of the Society has been exceedingly liberal and enthusiastic. The cabinet was commenced in January, 1860, and since then 3678 species have been presented.'

"The library of the Society, we are informed in the same Report, 'now contains 129 volumes and pamphlets,' and the Society numbered in December, 1861, '53 members and 27 correspondents.'

"In the report of the Recording Secretary for 1862 we find an increase to the collection of 1514 species, and an increase to the library of 344 volumes and pamphlets, including a number of rare and valuable works, and the Society numbered in December last 65 resident and 48 corresponding members.

"In the papers already published, 51 pages are devoted to Coleoptera, 4 to Neuroptera, 83 to Hymenoptera (45 of which are occupied with a paper by Osten-Sacken, on the Cynipidæ of the North-American Oaks), 53 to Lepidoptera, 22 to Hemiptera and 22 to Diptera.

"Amongst the coleopterous papers are two short papers on the habits of some coleopterous larvæ and pupæ, by G. H. Horn; one with descriptions of fourteen larvæ of North-American Coleoptera belonging to genera the preparatory states of which had not, to the knowledge of the writer (Baron R. Osten-Sacken), been made known before; one with descriptions of four new North-American Coleoptera, by Dr. Horn; andone with descriptions of nine supposed new species of Cerambycidæ, by J. H. B. Bland.

"Among the hymenopterous papers are the elaborate treatise (already mentioned) on the Cynipidæ of the North-American oaks and their galls, by Baron R. Osten-Sacken, and two with descriptions of (seven and six) new species of Tenthredinidæ, by E. Norton.

"Amongst the lepidopterous papers are four by Dr. Clemens, of which three are devoted to Micro-Lepidoptera, and one contains a Synopsis of the families of the Heterocera. The first paper on Micro-lepidopterous larvæ furnishes a good introduction to the successful study of those insects; a description is given of the modes of feeding of the larvæ of the genera Coleophora, Lithocolletis, Aspidisca, Nepticula, Ornix and Catastega, the number of species of which Dr. Clemens gives the habit of the larvæ in these genera being 7, 2, 2, 14, 1 and 3. The last-named genus is probably, how-

ever, as he suspects, allied to the Phycideæ, and not referable to the Tineina; the second Micro-lepidopterous paper contains descriptions of nine new species, including one of the curious genus Opostega; the third paper contains a notice of Bedellia somnulentella, bred from the leaves of Ipomæa purpurea, and of two new larvæ of the genus Nepticula in the leaves of the sycamore. Amongst the remaining papers on the order may be noticed Mr. Edwards' notes on Grapta Comma, *Harris*, and Grapta Faunus, *Edwards*, the latter species having been confounded by some authors with the European Grapta C-album; and Mr. Lintner's notes on the metamorphoses of Ceratomyia quadricornis, one of the Sphingidæ, in which we have a very detailed account of the whole process, from the egg to the pupa state, a change which is completed in six weeks. Mr. Edwards has given descriptions of four diurnal Lepidoptera occurring in the United States, which are figured in Doubleday's 'Genera,' but undescribed; they are Argynnis Astarte, Melitæa Chalcedon, M. Anicia and Timetes Coresia.

"The hemipterous papers are two in number; a short descriptive paper by P. R. Uhler on some new species, including a Capsus, which in some seasons is very plentiful on the Robinia Pseudacacia; and a highly philosophical paper on the genera of Aphidæ found in the United States, by Benjamin D. Walsh. In allusion to the probability of differences in the larval form of Aphides being correlated with the variation of the food-plant, and not necessarily implying that the two are specifically distinct, Mr. Walsh cites the case of the larvæ of Datana ministra (one of the Notodontidæ), which are always vittate with yellow, and with the upper surface of the first (second) segment yellow, when they feed on oak-apple, &c.; but when these larvæ feed on hickory or walnut they are entirely black, and yet between the moths produced from them there is no appreciable difference. Mr. Walsh in his summary tabulates the previously described species of Aphidæ in the United States as fifty-seven in number, and the new species described in this paper as thirteen, making a total of seventy.

"The only dipterous paper is on the characters of the larvæ of Mycetophilidæ, by Baron R. Osten-Sacken. This paper contains '1st. A comparative description of the external anatomy of the principal genera in their larval form. 2nd. A brief account of what is known about the habits of each genus. 3rd. A list of references, with a short notice on the importance of each.'

"The only neuropterous paper is a short one by Mr. Buckley, descriptive of two new species of Termites. Why the Neuroptera should have attracted so very little attention is not apparent, but probably some important contributions on that order will shortly appear, and then the students of all the principal Orders of insects will find matter to interest them in the 'Proceedings of the Entomological Society of Philadelphia.'

"I annex a classified list of the papers already published, with references to the pages where they will be found."

Coleoptera.

"Catalogue of the Cicindelidæ of North America," by E. T. Cresson. Pp. 7—20.

"Notes on the Habits of some Coleopterous Larvæ and Pupæ," by G. H. Horn. Pp. 28—30.

"Observations on the Habits of some Coleopterous Larvæ and Pupæ," by G. H. Horn. Pp. 43, 44.

"Catalogue of the Longicorn Coleoptera taken in the vicinity of Philadelphia," by J. H. B. Bland. Pp. 93—101.

"Descriptions of some Larvæ of North-American Coleoptera," by Baron R. Osten-Sacken (with a plate). Pp. 105—130.

"Descriptions of some new North-American Coleoptera," by G. H. Horn, M.D. Pp. 187—188.

"On Winter Collecting," by H. T. Fay. Pp. 194—198.

"Descriptions of several supposed new Species of Cerambycidæ in the Collection of the Entomological Society of Philadelphia, with Observations on some already Described," by J. H. B. Bland. Pp. 267—276.

NEUROPTERA.

"Descriptions of Two New Species of Termites from Texas," by S. B. Buckley. Pp. 212—215.

HYMENOPTERA.

"Catalogue of the Described Species of Tenthredinidæ and Uroceridæ inhabiting North America," by E. T. Cresson. Pp. 33—39.

"On the Cynipidæ of the North-American Oaks and their Galls," by Baron R. Osten-Sacken. Pp. 47—72.

"Additions and Corrections to the above Paper," by Baron R. Osten-Sacken. Pp. 241—259.

"The Tarantula (Mygale Hentzii, *Girard*) and its Destroyer (Pompilus formosus, *Say.*)," by S. B. Buckley. Pp. 138, 139.

"Notice of several New Species of Tenthredinidæ," by E. Norton. Pp. 143, 144.

"Descriptions of several New Hymenoptera," by E. Norton. Pp. 198—200.

"On the Synonyms of Cimbex Americana," by E. Norton. Pp. 201, 202.

"A Catalogue of the Described Species of several Families of Hymenoptera inhabiting North America," by E. T. Cresson. Pp. 202—211 and 227—238.

LEPIDOPTERA.

"Micro-Lepidopterous Larvæ—Notes on a few Species the Imagos of which are probably Undescribed," by Brackenridge Clemens, M.D. Pp. 75—87.

"New American Micro-Lepidoptera," by B. Clemens, M.D. Pp. 131—137.

"North-American Micro-Lepidoptera," by B. Clemens, M.D. Pp. 147—151.

"Synopsis of Families of Heterocera," by B. Clemens, M.D. Pp. 173—181.

"Notes upon Grapta Comma, *Harris*, and Grapta Faunus, *Edwards* (Grapta C-album of some Authors)," by W. H. Edwards. Pp. 182—184.

"Additions to the Catalogue of United States Lepidoptera," by A. R. Grote. Pp. 218, 219.

"Descriptions of Certain Species of Diurnal Lepidoptera found within the United States, figured in Doubleday's 'Genera,' but Undescribed," by W. H. Edwards. Pp. 221—224.

"Description of a supposed New Species of Ægeriidæ from Virginia, and Observations upon Papilio Damus, *Boisd.*" by James Ridings. Pp. 277, 278.

"Metamorphoses of Ceratomyia Quadricornis, *Harris*," by J. A. Lintner. Pp. 286—293.

HEMIPTERA.

"Descriptions of a few New Species of Hemiptera, and Observations upon some already Described," by P. R. Uhler. Pp. 21—24.

"On the Genera of Aphidæ found in the United States," by Benjamin D. Walsh, M.A. Pp. 294—311.

DIPTERA.

"Characters of the Larvæ of Mycetophilidæ," by Baron R. Osten-Sacken (with a plate). Pp. 151—172.

The Secretary read a letter from Mr. C. A. Wilson, a Corresponding Member of the Society, which bore date Adelaide, March 26, 1863, and contained a brief account of the natural-historical results of the exploring party under Stuart, which had recently succeeded in traversing the Australian Continent from the South to the North-West Coast and back again. About fifteen hundred specimens of insects had been obtained, but none of the Orders Orthoptera, Neuroptera, Diptera or Lepidoptera; many Lepidoptera were seen, including some butterflies of singular form and beautiful colouring, but, owing to the accidental loss of all his entomological apparatus, Mr. F. G. Waterhouse, the naturalist attached to the expedition, had been unable to capture any. A few Hymenoptera had been obtained, and some Hemiptera, nearly all Scutelleridæ. In Coleoptera a new Cicindela, the first representative of that family in the South-Australian province: upwards of fifty specimens were knocked down one damp evening, about six hundred miles north of Adelaide; the species was of large size, smooth, and of a brilliant metallic green colour. There were a few new forms of Carabidæ, and many species of Dyticidæ and Gyrinidæ, evidently quite new. The South-Australian species were generally unicolorous, but these were spotted or banded with different colours. Of Staphylinidæ or Paussidæ none; of Lamellicorns but few; some of Copris?; a few Cetoniæ; some large and handsome Buprestidæ, probably new; and many additions to Agrilus and the allied genera. There were many new Heteromera, Curculionidæ both large and small, and several distinct species of a genus with long antennæ, which was either curculionideous or was intermediate between the Curculionidæ and the Longicorns. Of the last-mentioned tribe there were also a few representatives, principally Lamiæ, which did not occur in any of the South-Australian collections.

Special General Meeting.

June 1, 1863.

Frederick Smith, Esq., President, in the chair.

The Secretary read the notice by which the Special Meeting had been convened for the purpose of considering the following Resolution of the Library and Cabinets Committee, adopted at its Meeting of the 30th of March, 1863:—

"That the present income and the financial prospects of the Society do not warrant this Committee in believing that the Society is or will be able to provide the sums requisite for forming a Collection of British Insects which shall be worthy of the Society, and for maintaining the same in a satisfactory state.

"This Committee therefore recommends to the Council that the Society's Collection be discontinued, and that proper steps be taken for the disposal of the specimens and cabinets.

"The Committee, however, further recommends that the type-specimens be not dispersed, but be placed in some public Institution where they will be readily accessible and available for scientific purposes; and the Committee suggests the feasibility of some arrangement by which the specimens in question might be placed in the British Museum."

It was moved by Mr. Pascoe, and seconded by Dr. Baly:

"That the recommendations of the Library and Cabinets Committee, contained in their Report to the Council of the 30th of March, 1863, be carried into effect in such manner and at such time as the Council, in its discretion, shall think fit."

An Amendment was moved by Mr. J. W. May, and seconded by Mr. Edwin Shepherd:

"That the whole of the Society's Collection of Insects be sold, the type-specimens as well as the others."

The Meeting having been also addressed by Mr. Francis, Mr. Waterhouse, Mr. Desvignes and Mr. Dunning, the Amendment was, on a show of hands, declared to be lost.

The President then put the original Resolution, when the numbers were—for the Resolution, 22; against, 0.

July 6, 1863.

Frederick Smith, Esq., President, in the chair.

Donations.

The following donations to the library were announced, and thanks returned to the several donors:—'Transactions of the Zoological Society of London,' Vol. iv. Part 7, Section 2; Vol. v. Parts 1 and 2. 'Proceedings of the Scientific Meetings of the Zoological Society of London,' 1861, Part 3; 1862, Parts 1—3; presented by the Society. 'Schriften der Königlichen Physikalisch-ökonomischen Gesellschaft zu Königsberg,' 1862, Parts 1 and 2; by the Society. 'Exotic Butterflies,' Part 47; by W. W. Saunders, Esq. 'Illustrations of Diurnal Lepidoptera,' Part 1 (Lycænidæ); by the Author, W. C. Hewitson, Esq. 'Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien,' Vol. xii.; by the Society. 'Personen, Orts und Sach-Register der zweiten fünfjährigen Reihe (1856—1860) der Sitzungsberichte und Abhandlungen der Wiener Kais. Königl. Zoologisch-Botanischen Gesellschaft;' by the Society. 'Neue Crustaceen, gesammelt während der Weltumseglung der K.K. Fregatte Novara, zweiter vorläufiger Bericht;' by the Author, Dr. Cam. Heller. 'Sitzungsberichte der Königl. bayer. Akademie der Wissenschaften zu München,' 1862, ii. Parts 3 and 4; 1863, i. Parts 1 and 2; by the Academy. 'Proceedings of the Royal Society,' Vol. xii. No 55; by the Society. 'The Intellectual Observer,' No. 18; by the Publishers. 'The Zoologist' for July; by the Editor. Fifty-six Memoirs by M. le Dr. Léon Dufour, from various scientific Periodicals and Transactions; by the Author. 'The Journal of the Society of Arts' for June; by the Society. 'The Reader' for June; by the Editor. 'A List of the Butterflies of New England;' by the Author, Samuel H. Scudder, Esq.

Special Vote of Thanks.

On the proposition of Mr. Dunning, seconded by Mr. S. Stevens, a special vote was unanimously passed, returning thanks to Mr. W. W. Saunders for his hospitable reception of the Society at Reigate, on the 20th ult.

Exhibitions, &c.

Professor Westwood, referring to the exhibition by the President, at the June meeting, of some hermaphrodite hive-bees, made some remarks as to the bearing of that exhibition upon the question of parthenogenesis in bees. He considered that the fact of the existence of a hermaphrodite was inconsistent with the truth of the theory of parthenogenesis. The President, on the contrary, did not think the fact necessarily inconsistent with the theory, but probably explicable by and referable to some imperfection of the organs of the queen bee from which the hermaphrodite was born.

Mr. S. Stevens exhibited a large collection of South-Australian insects, principally Coleoptera, and containing many novelties; they had been collected by Mr. George French Angus, who had recently returned to this country from Australia.

Mr. Waterhouse exhibited Carabus auratus, captured on the coast of Kent: four specimens had been taken by Mr. Brewer, running about in the hot sunshine; the locality was between Dover and Hythe, but was not more precisely stated.

The President mentioned that about twenty years ago Mr. Walton had brought

thirty living specimens of C. auratus from France, and had turned them loose on the coast between Dover and Deal.

Mr. Stainton exhibited specimens of Elachista apicipunctella bred by Herr Albarda, by whom the larva had been first observed two years ago. The following note, communicated by the Dutch entomologist, was read:—

Habits of Elachista apicipunctella.

"These larvæ mine the leaves of Holcus lanatus and sometimes of Festuca pratensis and F. elatior, from November to March. They mine downwards from the point of the leaf, occupying the entire breadth; the mine is not conspicuous. On the upper side of the leaf the epidermis remains flat, and is but slightly discoloured (especially in the Festucæ), the under side being more puckered and yellowish. The grayish excrements are irregularly scattered throughout the mine. The larva seems to prefer those leaves which lie flat on the ground and are covered by the others, and may thus have escaped observation. In mild winters, like the past, the larvæ feed continuously, and are full-fed in February, but when the cold is more intense they remain motionless until the frost is over, and then continue the same mine, notwithstanding that the leaf may be somewhat withered. When nearly full-fed they remove to a fresh leaf.

"When full-fed the larva seeks a convenient corner, commonly the base of the leaf, to undergo its change, and spins a very slight web of parallel threads, surrounding the middle of the body with a silken girth. They remain one or two weeks before they change to the pupa state, after which the perfect insect appears in about five or six weeks, according to the weather.

"The imago is seldom seen on the wing, but can easily be captured in the afternoon, when they are sitting on the leaves of the food-plant, the females having commonly their wings erected perpendicularly, as it seems to attract the males.

"This insect is not at all uncommon here (at Leeuwarden). In sandy localities, where Holcus lanatus abounds, the larvæ are probably more scattered, but along the roads in clayey localities, where that plant occurs here and there, a single tuft is often tenanted by more than thirty larvæ.

"A summer brood, though very probable, has not yet been observed."

Professor Westwood mentioned that, during a recent trip in the Italian portion of the Tyrol, he had observed the leaves of the walnut trees to be blackened throughout the distal half, and apparently scorched; on examination they were found to be rolled up by the larvæ of one of the Tineidæ, which had proved to be Gracilaria rufipennella, a species which ordinarily fed on the plane tree. The pupæ were of singular form, the antenna case in the males extending beyond the extremity of the abdomen.

Professor Westwood exhibited drawings of the larvæ and pupæ of the genera Coronis and Castnia: those of Coronis were taken from the collection of Dr. Kaden at Dresden, which was very rich in illustrations of the transformations of the Lepidoptera of Granada, which had been formed by Moritz; the larva was supplied with spines on its back, like some of the Notodontidæ. The larva of Castnia burrowed in the stems of trees, and was a long fleshy grub, like that of a Longicorn beetle, whilst the pupa had its abdomen furnished with two rows of reflexed spines, which enabled it to work its way along the burrows, after the manner of Cossus.

Professor Westwood exhibited specimens and photographs of Papilio Castor and P. Pollux. In the 'Arcana Entomologica' he had described those forms as distinct

species, but Mr. George Gray, conceiving them to be the sexes of one species, had given P. Pollux as a synonym of P. Castor; the Professor, however, exhibited males of both forms and females of P. Pollux, and he exhibited a specimen of P. Castor from the collection of Mr. Semper, of Altona, one of the wings of which was partly of the ordinary form of the male, whilst the remainder of the wing had the markings and coloration which (judging from analogy) the female of P. Castor would possess. From a consideration of these circumstances the Professor was still disposed to maintain the specific distinctness of the two forms. Apart from its bearing on this question, Mr. Semper's specimen of P. Castor was extremely interesting, as exhibiting a new phase in hermaphroditism; all the hermaphrodites with which he was previously acquainted had some of their members of the form peculiar to one sex, and some of the form peculiar to the other sex, but each limb was completely of one sexual form; here, on the other hand, the wing was partly male and partly female; the wing itself was hermaphrodite, the limb was gynandromorphous. It was to be noticed, moreover, that this gynandromorphism did not extend through equal and corresponding portions of the upper and lower surfaces of the wing, but the sexual variation in marking and colour was spread over a larger space on one surface than on the other; if he might so speak, the gynandromorphism was in the plane of the wing, not perpendicular to that plane, and the surface of contact between the male and female portions of the limb could not be traced out by the motion of a straight line kept constantly perpendicular to the wing-plane.

Professor Westwood exhibited the imago of Eucheira socialis, a Mexican species whose larvæ were gregarious, and the family-cocoon of which had been described by him in an early volume of the Society's 'Transactions.'

Mr. Miller exhibited a specimen of Œcophora Lambdella, taken by Mr. Butters, near Grays, Essex.

Mr. Stainton exhibited some hazel leaves which had been mined by the young larvæ of Micropteryx fastuosella, and which he had recently gathered in the neighbourhood of Marlborough; there were numerous leaves bearing traces of the former presence of the larvæ, but in one leaf only did he find a larva actually present; careful search at an earlier period of the year would doubtless lead to the breeding of the species in this country, and to a corroboration of the observations of Herr Kaltenbach.

Mr. Stainton mentioned that during his visit to Marlborough he had had the pleasure of awarding a prize which had been offered by one of the masters at the College for the best collection of insects formed during the previous year. There were seven competitors, each of whom, in addition to the production of his collection, was put through an examination in the elementary parts of the Science; and the result was so satisfactory that Mr. Stainton was led to hope that something similar would be done at other public schools, which would thus serve as nurseries for the Entomological Societies of the Universities.

Mr. Stainton exhibited his collection of original drawings of the larvæ of Tineina, a portion of which, with descriptions, had already appeared in the 'Natural History of the Tineina,' whilst the remainder were intended for publication in the future volumes of that work.

Mr. Moore exhibited some elm leaves which had been attacked by a species of Aphis; and leaves of Veronica Chamædrys bearing galls produced by a dipterous larva.

The President, on behalf of Mr. Marshall, exhibited Platyrhinus latirostris, numerous specimens of which were sent for distribution amongst the members.

Mr. E. Shepherd exhibited Ilyobates propinqua, Scopæus sulcicollis and Platystethus capito, all captured by himself near Reigate, on the occasion of the Society's visit to Mr. Saunders on the 20th ult.

Mr. Dunning read the following extract from a letter from Mr. Edwin Birchall, dated Birkenhead, June 7, 1863:—

"I have bred three specimens of Dianthœcia capsophila during the last few days; the bred specimens have not a trace of brown or yellow, they are pure black and white; in fact they look nearer to D. conspersa than to D. carpophaga, of which some will have them to be the Irish representative. It seems to me that our English species ought to be arranged thus—conspersa, capsophila, carpophaga, capsincola, cucubali; the two last only have the prolonged ovipositor."

The Secretary exhibited some white silky matter, resembling delicate tissue-paper, which had been sent to the Society by Mr. R. Thomson, of Alderney Road, Mile End, and described by him as having been "taken off a plank that formed part of a bin in which raw chicory had been stowed, apparently the deposit of insects, as numbers flew away when the goods were disturbed."

It was suggested by Mr. Stainton that the silken web had probably been made by the larvæ of Tinea granella, though he was not aware of an instance of that species having attacked chicory.

It was announced that Mr. B. T. Lowne (who was present as a visitor) was about to proceed to Bahia on an entomological excursion of some duration, and that Mr. S. Stevens would act as his agent in this country for the reception of his captures.

A communication from Dr. Dohrn and Dr. Behm, of Stettin, was read, stating that the Thirty-eighth Assemblage of German Naturalists and Physicians would be held at Stettin, from the 18th to the 24th of September, 1863, requesting the attendance of naturalists of other countries, and assuring the members of the Entomological Society of London that they would meet with a hearty welcome.

Professor Westwood entered into some details of the arrangements contemplated at Stettin for the reception of foreigners, and mentioned also that a meeting of Scandinavian naturalists would be held at Stockholm a few days before the Stettin meeting.

Papers read.

Mr. Pascoe read some "Notes on Australian Longicorn Beetles, with Descriptions of Sixty new Species."

Mr. Walker read two papers, entitled "Descriptions of some new Ægeriidæ" and "Descriptions of some new Sphingidæ."

Sale of the Society's Collection of Insects.

It was announced that the sale of the Society's Cabinets and Collections of Insects (except the type-specimens, part of which had been presented, and part sold, to the British Museum) would take place on Wednesday, the 8th of July.

New Part of the 'Transactions.'

A new part of the 'Transactions' (Entom. Trans. Third Series, Vol. i. Part 6), being the second quarterly Part for 1863, was on the table.

Entomology and the British Museum.

The chair having been vacated by the President, and taken by Mr. Pascoe, V.P.:

Professor Westwood rose to call the attention of the Meeting to the threatened appointment of a successor to Mr. Adam White at the British Museum. After referring to the circumstances under which the vacancy at the Museum had arisen, and the large additions to the entomological collections which had recently been made, the Professor insisted that a good staff of practical entomologists was requisite to keep the collections in proper order and continue the work of classification which had been so successfully begun. The two entomologists upon whom this task had devolved were Mr. Frederick Smith and Mr. Adam White: the latter was removed, so that Mr. Smith remained alone. To fill the post vacated by Mr. White there were numerous candidates, including several good working entomologists who were in every respect eligible. It would naturally be supposed that some one of these competent persons would have been selected to supply Mr. White's place and carry on his work, but so far from this natural supposition being likely to prove correct, the facts were, that during the ill-health and consequent absence for several months of the Principal Librarian, an officer whose sway did not appear to be limited to the Library, but to extend over all the departments of the Museum, no appointment at all was made, and now that that functionary had returned there had been nominated (though fortunately not yet appointed) to the vacancy a gentleman whose previous employment had been that of a transcriber in the Book Department, who was entirely ignorant of Entomology, and did not know a butterfly from a moth or a beetle from a bug. Professor Westwood thought this was a matter which concerned the Society, and he asked its aid to assist in preventing, if possible, so injudicious a nomination from being perfected into an appointment. After a commendatory allusion to the temporary resignation of the chair by the President, lest his personal interest in the question and his position at the Museum might seem in any way to have been made to influence or interfere with the independent judgment of the Meeting, the Professor concluded by proposing the following Resolution:—

"Considering the state of the Entomological Collection in the British Museum, and the vast accessions, still unarranged, which it has recently received, and which render it the most valuable collection in the world: considering, also, that the proper classification of that collection requires the services of more than one person skilled in the Science of Entomology—

"Resolved, that the nomination, in the place of Mr. Adam White, of a gentleman previously employed as a transcriber in the Printed Book Department of the Museum, and entirely unknown as an entomologist, cannot but prove a great detriment to the progress of the classification of the collection, and is virtually a waste of the public money. Such nomination is the more objectionable as several competent entomologists were candidates for the post."

The Resolution was seconded by Mr. Stainton; and after much consideration and a long conversation, in which Professor Westwood, Dr. Baly, Mr. A. R. Wallace and others took part, the same was put to the meeting and was carried *nem. con.*

Professor Westwood moved "That a copy of the above Resolution be sent to the

Trustees of the British Museum, to the Principal Librarian, and also to J. Aspinall Turner, Esq., M.P."

This was seconded by Mr. S. Stevens, and carried unanimously.

August 3, 1863.

F. P. Pascoe, Esq., V.P, in the chair.

Donations.

The following donations were announced, and thanks voted to the respective donors:—'Bulletin de la Société Impériale des Naturalistes de Moscou,' Année 1862, No. 1; presented by the Society. Five quarto Tracts on Fossil Insects, &c., by H. A. Hagen, C. von Heyden, H. von Meyer and H. Rathke; Ten Numbers of the 'Neue Preussische Provinzial-Blätter' for various years, containing articles on Entomology; Six octavo Tracts on Neuroptera, &c., by Dr. H. A. Hagen; Five octavo Tracts on Neuroptera, &c., by F. Brauer; Three octavo Tracts on Coleoptera, Myriapoda, &c., by Professor E. von Siebold; Two octavo Tracts by Victor Motschulsky; One octavo Tract, by Franz Loew; Ten octavo Tracts, by Mons. E. de Selys Longchamps; One octavo Tract ('Separatabdruck naturwissenschaftlicher Abhandlungen aus der Schriften des Zoologisch-Botanischen Vereins in Wien'); presented by Dr. H. A. Hagen. 'The Intellectual Observer,' No. 19; by Messrs. Groombridge and Sons. 'The Zoologist' for August; by the Editor. 'The Athenæum' for July; by the Editor. 'The Reader' for July; by the Editor. 'The Journal of the Society of Arts' for July; by the Society. 'Zwölf Amerikanische Nachtfalter; Chilonidarum et Crambidarum Genera et Species;' by the Author, Professor P. C. Zeller. 'Stettiner Entomologische Zeitung,' 1863, Nos. 7—9; by the Entomological Society of Stettin. The following addition to the Library, by purchase, was also announced:—'Auguste Vinson, Aranéides des Iles de la Réunion, Maurice et Madagascar.'

Exhibitions, &c.

The Secretary, referring to the exhibition, at the July meeting, of some white silky matter probably caused by lepidopterous larvæ, said that he had received another communication from Mr. Thomson, enclosing specimens of the moth which flew out of the bin when the chicory was disturbed. These proved to be Ephestia elutella; but it was thought improbable by the lepidopterists present that the silky web was the product of that species.

The Rev. Hamlet Clark exhibited the water-beetles captured by Mr. F. G. Waterhouse during his recent journey of exploration with Stuart across the Australian continent. There were two species of Cybister, both new, but allied to northern forms; three of Hydaticus, of which one was a dark variety of a Moreton Bay species, one was common in the North, and the third was new; two of Colymbetes, both new; one of Agabus, new; two of Copelatus, of which one occurred in Lizard's Island and the

other was new; one of Ennectes, which occurred everywhere; two of Hydroporus, of which one was a common South-Australian form and the other a new species; one of Hyphidrus, new; two of Gyrinus, of which one was common at Adelaide and the other new; and one of Dineutes, new. There were thus seventeen species, the produce of the Expedition, represented by twenty-six specimens; of these two were common species in South Australia, one occurred in profusion at Adelaide, and one was common everywhere, leaving thirteen new species, of which seven were without any special affinities, whilst six were nearly related to northern species.

Mr. Stainton exhibited some alder leaves said to contain larvæ of Tinagma resplendellum; the larvæ, however, were not visible, being concealed within the midrib or leaf-stalk. When young the larvæ gave a slight curvature to the leaf, and were almost always found on the antepenultimate leaf of an alder shoot; they then mined down the midrib and leaf-stalk, eating down one side and returning up the other side, and finally, when nearly full-fed, made a blotch on the leaf, by which they might readily be discovered.

Professor Westwood had endeavoured to discover generic characters in the eggs of birds, but had been unable to do so. He should be glad to know if Mr. Stainton's experience of leaf-mining larvæ had led him to the discovery of characters in the mines which were of generic value; if so, regard ought to be had to them in any future arrangement of the Micro-Lepidoptera.

Mr. Stainton replied that not only were the characters of the mine of high importance for the discrimination of species, but he considered that the mines exhibited generic characters also. If a new mine were shown to him he could generally name the genus to which the insect was to be referred.

Mr. Haward exhibited the pupa and a bred imago of Ocypus ater. The larva was found in, and fed on, a piece of elm wood; and had been kept in a glass jar between two and three months, at the end of which time the imago emerged.

Professor Westwood called attention to the ravages committed on the willow trees in Essex by Cryptorhynchus Lapathi. There was an interesting paper on the subject published in the Linnean 'Transactions' during the last century, by W. Curtis, since which time he was not aware that any further record of the destructive habits of the species had been made. The larva burrowed in the willows, and had attacked the rarer cultivated species in Essex to such an extent that the growers were in fear of entirely losing their crops.

Mr. Timins exhibited bred specimens of Papilio Machaon, Thais Cassandra, Polyommatus Iolas and Clostera anachoreta, their appearance having been hastened by keeping the pupæ in confinement at a temperature of about 60° Fahr. He also read the following notes:—

On Rearing Lepidoptera in Winter, and on the possibility of Naturalizing Exotic Lepidoptera.

"The statement of some old authors 'that Lepidopterous insects, when forced by the application of heat to emerge from the pupæ before their usual time of appearance, are never properly developed,' having been quoted and repeated in various more modern works, may mislead the tyro in Entomology; and as I have established the contrary fact by experience, I have thought it advisable to make these few notes on the subject, with the view of drawing the attention of collectors to the possibility of rearing

Lepidoptera in the winter, and of rearing, and perhaps naturalizing, exotic species of Lepidoptera.

"The advantages of causing Lepidoptera to emerge from the pupa during the winter appear to be that the collector has more time to devote to their setting, and more space upon his setting-boards than during the summer; and that very often the collector may travel during the summer, in which case his pupæ cannot easily be attended to.

"I have reared the following species during the winter (placing the pupæ in a warm room for the purpose):—Papilio Machaon, Thais Hypsipyle, Polyommatus Iolas, Smerinthus Populi, Phæosia Dictæa, P. Dictæoides, Saturnia Spini, S. Pavonia-Major, Phalera bucephala, Clostera curtula, Plusia Moneta.

"Specimens of each of these species (and of many others) emerged from the pupæ during the months of January and February at Boulogne-sur-Mer; and at Oxford, during the month of April, I reared Thais Hypsipyle and Polyommatus Iolas (in 1860). In no case was there any variation from the usual type of the species, except in the case of Smerinthus Populi, and this was due to the various kinds of food with which I supplied the larvæ of that species, and which produced some singular varieties. I have also reared various species of Exotic Lepidoptera from imported pupæ; *e.g.*, at Boulogne I reared Vanessa (Araschnia) Prorsa, Polyommatus Iolas, Saturnia Pavonia-Major, Thais Medesicaste, T. Cassandra, and T. Hypsipyle, from pupæ sent from the South of France; and also Catocala Fraxini from German pupæ: and at Oxford I reared Thais Medesicaste, T. Hypsipyle and T. Cassandra; also P. Iolas, Heliothis dipsacea and Ophiusa Geometra from French pupæ. I also reared Plusia Moneta and Deilephila Nicæa from Italian pupæ at Boulogne.

"In the 'Butterfly Vivarium,' published some years since, a suggestion was made of the possibility of naturalizing some of the beautiful species of Exotic Lepidoptera. So far as I can learn, no notice seems to have been taken of this suggestion, though it cannot be devoid of interest to many of our British collectors, and I have made these few remarks, showing the possibility of rearing Lepidoptera from imported pupæ, in the hope that some of our collectors may be induced to try this mode of enriching our native Fauna. Whether such artificially-reared species would, if set at liberty, propagate themselves is a question which entomologists resident in Britain must set at rest. I have not myself had facilities for settling this point, but I have, I trust, shown the possibility of introducing foreign species into our country. We have succeeded in destroying some of our native species, *e.g.*, Chrysophanus Chryseis and C. Dispar, which appear to have become nearly if not quite extinct; and may it not be worth while to see whether we cannot enrich as well as impoverish our native Fauna?

"The specimens which I have had the pleasure of exhibiting this evening will prove the truth of my assertion, that they do not offer any variety or deviation from the ordinary types of the species, and they will at the same time disprove the ancient and oft-quoted opinion, that Lepidoptera, unless reared in their natural state and under their natural condition of temperature, are never properly developed."

Mr. Pascoe, after announcing the appearance of Professor Lacordaire's sixth volume, containing the Curculionidæ, and speaking in terms of admiration of the author's masterly treatment of the subject, took the opportunity of stating that

Lacordaire was in error in supposing that Eurhamphus fascicularis was confined to New Zealand, as he knew species to occur also in Australia.

It was announced that Mr. B. E. Lowne's entomological excursion to Bahia was abandoned, and that two Messrs. Wilson of Adelaide (cousins of Mr. Alfred R. Wallace) were about to make a natural-historical exploration of the islands to the east of New Guinea.

Paper read.

A paper, entitled "Descriptions of some new Genera and Species of Exotic Hemiptera," by Dr. C. Stål, of Stockholm, was read by the Secretary.

September 7, 1863.

Frederick Smith, Esq., President, in the chair.

Donations to the Library.

The following donations to the library were announced, and thanks returned to the respective donors: — 'New Species of North American Coleoptera,' prepared for the Smithsonian Institution, by John L. Leconte, M.D.; 'List of the Coleoptera of North America,' prepared for the Smithsonian Institution, by John L. Leconte, M.D.; presented by the Smithsonian Institution. 'Proceedings of the Entomological Society of Philadelphia,' May to December, 1862; by the Society. 'Boston Journal of Natural History,' Vol. vii. Nos. 1—3; 'Proceedings of the Boston Society of Natural History,' Vol. vi. Sheets 23—27 inclusive, Vol. vii., Vol. viii., Vol. ix. Nos. 1—11; by the Society. 'Abhandlungen der Mathemat-Physikalischen Classe der Königl. Bayerischen Akadamie der Wissenschaften,' Vol. ix.; by the Academy. 'Bibliotheca Entomologica,' von Dr. H. A. Hagen, Vols. i. and ii.; by the Author. 'Genera des Coléoptères,' par M. Th. Lacordaire, Vol. vi. and Livr. 5 and 6 of Plates; by Prof. Lacordaire. 'Monographie des Elaterides,' par M. E. Candèze, Vol. iv.; by the Author. 'Proceedings of the Natural History Society of Dublin,' Vol. iii. Part II.; by the Society. 'Beitrag zur Käferfauna der Insel Jesso, bearbeitet von August Morawitz,' Erste Lieferung. Cicindelidæ et Carabici; 'Vorläufige Diagnosen neuer Coleopteren aus Südost-Sibirien,' von Cand. August Morawitz; 'Vorläufige Diagnosen neuer Carabiciden aus Hakodade,' von Cand. Aug. Morawitz; by the Author. 'Proceedings of the Royal Society,' Vol. xii. No. 56; by the Society. 'The Intellectual Observer,' No. 20; by Messrs. Groombridge & Sons. 'The Zoologist' for September; by the Editor. 'The Athenæum' for August; by the Editor. 'The Reader' for August; by the Editor. 'The Journal of the Society of Arts' for August; by the Society. 'On Cephalization, and on Megasthenes and Microsthenes, in Classification,' by James D. Dana; by the Author.

Election of a Member.

William Wix, Esq., of Cockshot Hill, Reigate, was ballotted for, and elected a Member of the Society.

Exhibitions, &c.

Mr. S. Stevens exhibited some Hemiptera and Hymenoptera, and a collection of Coleoptera made by Mr. F. G. Waterhouse during his journey of exploration across

the Australian Continent; from one-fourth to one-third of the Coleoptera appeared to be species new to Science.

Mr. Bond sent for exhibition the following Lepidopterous Larvæ, admirably preserved by Mr. T. Baker, of Cambridge:—Papilio Machaon in four different stages of growth, Vanessa Io, Arctia caja, Odonestis potatoria, Gastropacha quercifolia, Porthesia auriflua, and Cucullia Verbasci.

Prof. Westwood remarked that Mr. Baker's preparations rivalled those of Dresden in beauty: he had been informed that the method adopted at Dresden was to squeeze out the intestines through a hole made near the anal extremity of the larva, then to insert a fine straw, and blow the skin out, after which it was placed in a glass vase, which was itself placed in a tin vessel and held over a lamp, by which the larva-skin was quickly dried. The small larvæ, as those of the Tineæ, were put alive into the hot bottle, baked until they swelled to the proper extent and dried, and were then pinned with all their contents inside.

Mr. D. Sharp exhibited a specimen of Coccinella labialis, taken a week previously at Herne Bay.

Mr. Janson expressed an opinion that C. labialis was only a variety of the common C. 7-punctata.

Mr. Waring exhibited two males and a female of Lithostege nivearia, taken in Suffolk; and a male specimen of Sterrha sacraria, taken at Banstead Downs: both these rare Geometræ had been captured by Mr. Bouchard.

Mr. Stainton entered at length into some interesting details respecting the characters of the mines of numerous genera of leaf-mining Tineæ, and exhibited the result of his observations by means of a table, in the different columns of which the principal and distinguishing peculiarities of each genus were shown.

Papers read.

Mr. Walker communicated a paper entitled "Characters of undescribed Lepidoptera:" the species described belonged to the three Heterocerous families of the Castniidæ, Agaristidæ and Zygænidæ, and were most of them in the collection of the British Museum.

Prof. Westwood read some "Descriptions of new Species of Longicorn Beetles:" some of the species described belonged to Mr. Semper, of Altona, and were principally from the Manillas; the other descriptions were drawn up from specimens in the Oxford Museum.

The Secretary read the Introductory Remarks to Major Parry's "Catalogue of Lucanoid Coleoptera; with Descriptions and Figures of new and interesting Species."

Arising out of some remarks by Major Parry on the extraordinary mandibular development of the Lucanidæ, and a suggestion that the intermediate form of male, more nearly resembling the female, so constantly found in this group of insects, might possibly be neuters, an interesting conversation took place. Mr. Bates inquired whether the generative organs of these so-called small or intermediate males had ever been properly examined, and referred to Mr. Pascoe's explanation of similar phenomena among the Longicorns, by what was termed "dimorphism." Prof. Westwood said that the suggestion that these were neuter forms was not new, but had been made by Kirby and Spence in their 'Introduction to Entomology;' he himself had never examined the organs of generation of these particular forms, but intermediate male forms

seemed to occur in almost all the cornuted beetles, and also in those with long antennæ. Mr. Pascoe said that his notion had been that the second form was probably the produce of a second brood, born or reared under different circumstances from the original brood. Mr. Bates replied that, in the Copridæ, the two forms certainly occurred in the same brood; he had once thought that the variation of the mandibles and antennæ was owing to the absence of any precise function which those organs had to fulfil, by reason of which absence there was nothing to limit or give the character of fixedness to the amount of variation. Mr. Janson thought it was settled that the function of the mandibles of the Lucanidæ was to break or bruise the bark of trees, with a view to the sustenance of the insect. Mr. Jekel replied that the females, without the development of mandibles, had to do that as much as the males with the large development. The President referred to the case of certain bees which were unmistakeably males, and possessed appendages in the form of horns, as *e.g.* the male of Osmia cornuta. Mr. Bates inquired whether the males of the Lucani (L. Cervus, for instance) fought with one another, and used their mandibles as weapons of offence, like deer, which amongst the Mammalia might be considered to correspond with the horned beetles amongst insects. Prof. Westwood said that males of Trichiosoma had been found fighting together, with their mandibles locked. Mr. Bates concluded that, fundamentally, horns were excrescences of the male organization, and that it was an afterthought of Nature to make them subserve any particular function.

October 5, 1863.

F. P. Pascoe, Esq., V.P., in the chair.

Donations to the Library.

The following donations were announced, and thanks returned to the respective donors:—'The Journal of the Royal Agricultural Society of England,' Vol. xxiv. Part 2; presented by the Society. 'Sitzungsberichte der Königl. bayer. Akademie der Wissenschaften zu München,' 1863, I. Heft. 3; by the Academy. 'The Intellectual Observer,' No. 21; by the Publishers. 'On the Development of Chloëon (Ephemera) dimidiatum,' Part 1; 'On the Development of Lonchoptera,' by John Lubbock, Esq., F.R.S., F.L.S., F.Z.S.; by the Author. 'Exotic Butterflies,' No. 48; by W. W. Saunders, Esq. 'The Zoologist' for October; by the Editor. 'The Journal of the Society of Arts' for September; by the Society. 'The Farm and Garden,' Vol. ii. No. 22; Vol. iii. Nos. 25, 26, 27, 28 and 29; by C. A. Wilson, Esq., Corr. Memb. Ent. Soc. 'The Athenæum' for September; by the Editor. 'The Reader' for September; by the Editor.

Exhibitions, &c.

Prof. Westwood supplemented the account he had given at the last Meeting of the method pursued at Dresden in the preservation of larvæ, by stating that the larva-skin was not first blown out and afterwards placed in a glass vase over a lamp, but the skin was first placed within the vase and blown whilst actually suspended over the lamp, by which means the rapidity of the skin's drying was much increased; it was done with a small tube or blow-pipe fixed at the end of a bladder, which was held under the arm or between the knees, so as to leave the hands at liberty; and the straw which was

inserted into the body of the larva was fastened by a cross-pin stuck through the skin, which was thus retained in its proper position throughout the process of blowing.

Mr. W. W. Saunders exhibited some young Swede turnips, the lower part of the roots of which had been consumed by the larvæ of Agrotis segetum; the young plants had been very healthy, and promised an excellent crop; three weeks later they ceased to grow, and became yellow, which was attributed at the time to the weather; a fortnight afterwards a careful examination was made, and it was discovered that the roots were attacked just below the surface of the ground; scarcely one was affected above the surface, but the whole under part of the tubers was eaten away, four or five larvæ being found in each turnip, and the whole crop, three acres in extent, being entirely destroyed. He should be glad to hear of any remedy, or rather of some mode of preventing such destruction in future.

Prof. Westwood referred to Curtis's 'Farm Insects,' where many suggestions were made for preventing the ravages of the larvæ of A. segetum, or "surface grubs," as they were called. He himself believed that there was no plan so efficacious as employing children to pick and destroy the grubs, or turning a lot of ducks into the field.

Mr. Saunders pointed out that all the remedies suggested by Curtis were inapplicable to the present case, where the grubs were only found under ground, and within the earth-covered part of the root; in fact, the natural plan of getting at the grub was to pluck up the turnip; he was afraid that nothing would be effectual, short of discovering and destroying the eggs of the parent moth.

Mr. Stainton exhibited living larvæ of Anesychia bipunctella, from Wiesbaden; the species was formerly supposed to occur in this country, and, though now included amongst the reputed British Tineæ, might not improbably be found here again.

Mr. Stainton also exhibited specimens of Tortrix grandævana, *Zel.* (= tussilaginana, *H.-S.*), a large and prominent species, the larva of which was found on sand-hills on the shores of the Baltic, fed on the roots of the common coltsfoot (*Tussilago*), and formed perpendicular tubes in the sand, of the thickness of a man's little finger, within which it turned to the pupa; frequently the surrounding sand was blown away, and the tubes thus exposed were opened at the top by birds, which came in quest of the fat pupa within. This also was a species not unlikely to be found in this country, now that its habit had been discovered.

Mr. W. W. Saunders mentioned that one of his sons had observed, at Valencia, some sand-tubes which corresponded exactly with Mr. Stainton's description, and the origin of which he had hitherto been unable to explain.

Prof. Westwood exhibited some larva-cases of Psyche helicina; also some Trichopterous larva-cases, found at Mentone, and coated over with particles of stone; the silken grating spun by the full-grown larva when about to turn to the pupa, which was said to be usually at the head only of the case, was in this species spun at both ends, and this circular silken covering was closed up throughout one half of the circle, whilst the remaining semicircle was radiated open-work; the cases also had a long tail or appendage, which looked like a piece of grass or straw attached to the end. The species was Aspatherium picicorne; and out of one of the specimens the Professor had had the pleasure of extracting a parasitic Ichneumon, Agriotypus armatus, whose habit it was to descend beneath the surface of the water for the purpose of depositing its eggs upon the Trichopterous larva-case.

Mr. M'Lachlan remarked that, according to Von Siebold, all the specimens

affected by the parasite had a peduncle attached to the case; but the appendage to the cases exhibited appeared to be nothing but straw or vegetable matter.

Prof. Westwood also exhibited specimens of a beetle belonging to the family Nitidulidæ, which was parasitic in the nest of Trigona carbonaria, the honey bee of New South Wales: the wax which accompanied the specimens of the beetle sent to him was merely a rude shapeless mass, and he was unable to ascertain whether or not the Trigona made cells; he had also been desirous of discovering whether the larva of the beetle fed upon the larva of the bee, or upon the wax: with this view he had placed pieces of cooked meat before the larvæ, but they avoided it, and many of them died; upon the removal of the meat, he put in portions of the wax, which was soon found with the Coleopterous larvæ crawling over it.

The President sent for exhibition some specimens of the same beetle, accompanied by the following note:—

"This very interesting insect was obtained by Mr. T. W. Woodbury, of Exeter, from a nest of Trigona carbonaria, in which it lives, feeding upon the wax of which the combs are composed. The nest came from Brisbane, in Queensland. Specimens of the insect have been forwarded to Mr. Murray, who has so long worked upon the family of the Nitidulidæ, to which it belongs; and he informs me that it is the Brachypeplus auritus of his work, the ear-like form of the basal joint of the antennæ having suggested its specific name. The insect is closely allied to the British Carpophilus hemipterus, which is frequently found in great numbers feeding upon figs; both select a sweet and nourishing substance upon which to feed, both in the larval and perfect condition. I hope on another occasion to give some account of the nest in which the beetle was found, as my friend Mr. Woodbury proposes a thorough investigation of it."

Mr. Bates exhibited some South-American palm-nuts attacked by the larvæ of Caryoborus cardo, one of the Bruchidæ, which had recently been received by Mr. Cutter, of the Crystal Palace; specimens of the imago, of the larva in various stages of growth, and of the nuts in corresponding stages of destruction, were shown; the nuts belonged to three species of palm, of which the largest was probably the Maximiliana regia. A similar disappointment had occurred to Bonpland, who brought over a number of nuts from New Granada, intending to plant them in France, but on his arrival the whole were found to be attacked by the larvæ of Caryoborus curvipes.

Mr. Cutter (who was present as a visitor) explained the circumstances under which he had received the palm-nuts: 1000 specimens of each kind had been sent by Mr. Henderson, of Parà, and the consignment would have been worth £30, if not attacked by the larvæ, from which, however, scarcely a single nut was free, whilst some contained as many as a dozen grubs.

A letter from Mr. John Young, of No. 80, Guildford Street, addressed to the Treasurer, was read, in which the writer complained of the presence of large swarms of a small ant in the kitchen of his house, and enquired what means could be adopted to rid the house of such a pest.

Mr. Bates suggested a search for the nest, and when found to deluge it with hot water.

Prof. Westwood said that, many years ago, a Committee of the Society had examined into this very subject, and the conclusion arrived at was that the most efficacious plan was to make a careful search for the principal runs, and place therein

pieces of raw meat; these were quickly covered with ants, which might at once be put into boiling water and destroyed, and the process then be repeated.

Mr. Stainton gave the following account of the Entomological Proceedings of the 38th meeting of German Naturalists, held at Stettin, from the 18th to the 24th of September last:—

"Monday, September 21, 1863, under the Presidency of Herr von Kiesenwetter.

"Director Loew exhibited his work on the European Trypetidæ, and called attention to the twenty-six photographic figures, which had been executed at the Royal Printing Press at Vienna.

"Dr. Kraatz, of Berlin, reduced Melolontha albida of Redtenbacher, from Austria, and M. albida of Mulsant, from France, as also M. candicans of Burmeister, by the help of Grecian specimens, to the ordinary cockchafer (*Melolontha vulgaris*), and showed that Greek female specimens were hardly to be distinguished, or were quite undistinguishable, from the Rhineland M. albida of Erichson (Rhenana, *Bach*), without, however, being able with certainty to refer the last-named species to M. vulgaris as a variety. The fourth German species, M. aceris, *Erichson*, was identical with the M. albida of Bach, and must be called M. pectoralis of Germar.

"Herr v. Kiesenwetter, in reference to the preceding and to the Darwinian theory, suggested to entomologists that in no other branch of science did material stand so ready to hand for making experiments in breeding by selection the commonest species of insects.

"Herr Toepffer, of Stettin, explained how he had succeeded, by means of a breeding apparatus, in obtaining healthy larvæ and imagines from the eggs of Bombyx Mori brought by the Prussian expedition from Japan, so that he had already distributed eggs gratis amongst 150 breeders, who were, almost without exception, very well satisfied with the results; the species seemed well acclimatized and produced each year better cocoons. Herr Toepffer expressed himself little satisfied with the Ailanthus and Ricinus larvæ recommended by Guérin-Menéville. In conclusion he exhibited cocoons of the different races, and various manufactures of Pomeranian silk."

"Wednesday, September 23, 1863; under the Presidency of Herr Schulrath Suffrian.

"Professor Münter spoke concerning the Fungi parasitic on insects, and exhibited a larva of Bombyx pudibunda with a huge Gordiceps, and a Carabus nemoralis with Sphærius entomorhiza. He called on entomologists to direct their attention to these objects when collecting.

"Herr Stein, of Berlin, Director Loew, and Dr. Hagen spoke of similar appearances amongst exotic insects.

"Dr. Hartig, from Brunswick, made a communication respecting the Calobates Rhizomæ, recently discovered by him, and exhibited a specimen. It is an insect allied to Aphis, which occurs at the roots of fir trees, and is distinguished by a perfectly anomalous structure of the legs, since the tibia and tarsus are grown together in one straight piece. He also stated that Hylesinus micans, and especially Pissodes Hercyniæ, had lately become highly injurious to the forests of Brunswick and Hanover, and that along with them their foes, Cryptus impressus, Conites Hercyniæ, &c., had appeared, of which he exhibited several bred from Pissodes larvæ.

"Director Loew made a long discourse on the anatomical peculiarities of Oncodes

varius; his conclusion (which, in reference to the allied anatomy of the Cyrtidæ, seemed well founded) was, that Oncodes should be referred to the neighbourhood of the Bombylidæ.

"Dr. Hagen spoke concerning the respiratory organs of Euphæa splendens, on which a discussion arose, in which Director Loew, Professor Grube, and others took part.

"Dr. Rogenhofer, from Vienna, exhibited specimens of both sexes of Pyralis luridalis of Fischer, of which the older name was connectalis of Hübner; he also spoke concerning the habits of Cephus spinipes and Cephus compressus.

"Professor Hering, of Stettin, remarked that Leucania Elymi, now that its habits were known, had been obtained in considerable plenty on the sand-hills near the Baltic amongst Elymus arenarius."

Paper read.

Mr. Baly read a paper entitled "Descriptions of New Phytophaga," in which were described nineteen new species, nearly all belonging to the true Chrysomelidæ.

New Part of 'Transactions.'

A new Part of the 'Transactions,' Third Series, Vol. i. Part 7, being the third quarterly part for 1863, was on the table.

November 2, 1863.

Frederick Smith, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the respective donors:—'Proceedings of the Royal Society,' Vol. xii. No. 57; presented by the Society. 'Catalogue of Halticidæ' (being a continuation of the British Museum Catalogue, Part i. 1860), by the Rev. Hamlet Clark, M.A., F.L.S.; by the Author. 'Motschulsky, Etudes Entomologiques,' 9e Année; by the Rev. H. Clark. 'The Zoologist' for November; by the Editor. 'The Farm and Garden,' Nos. 30, 31, 33 and 34; by C. A. Wilson, Esq. 'The Journal of the Society of Arts' for October; by the Society. 'The Athenæum' for October; by the Editor. 'The Reader' for October; by the Editor. 'A Catalogue of British Coleoptera,' by G. R. Crotch; by the Author.

The following additions by purchase were also announced:—'Genera des Coléoptères d'Europe,' Livraisons 112—116 incl. 'Skandinaviens Coleoptera synoptisk bearbetade af C. G. Thomson,' Vols. 1—5 incl.

New Member.

A certificate in favour of Henry Walter Bates, Esq., as a Member of the Society having been read, it was moved by Mr. S. Stevens and seconded by Mr. Dunning, "That, as in the recent case of the election of Mr. A. R. Wallace (and the consent of the Council having been obtained), the Bye-Laws relating to the election of Members be *pro hac vice* suspended, and that Mr. Bates be now declared to be a Member of the

Society." This was carried by acclamation, and Mr. Bates was thereupon admitted as a Member, and signed the Obligation Book.

Alteration of Bye-Laws; Notice of Special Meeting.

Notice was given that, in consequence of a requisition presented to the President and Council, signed by six Members, a Special General Meeting would be held on Monday, the 25th January, 1864 (the next Anniversary), at 7 P.M., for the consideration of certain alterations in the Bye-Laws specified in the requisition, and the object of which was, to abolish the Library and Cabinets Committee and the Publication Committee, and to vest their powers and duties in the Council, to change the title of Curator to that of Librarian, and to repeal the clause by which it is enacted that no resident in Great Britain shall be an Honorary Member of the Society.

Exhibitions, &c.

The President exhibited the nest of Trigona carbonaria referred to in the 'Proceedings' of the last Meeting; it had been recently received from Queensland, and was constructed in an artificial situation, in the interior of a box, by reason of which its appearance was probably different from the normal form of the nest; on the upper (or free) side was a quantity of matter, of a coralline structure, which was apparently made for the purpose of carrying the nest up to the top of the box, and thereby of attaining additional support. Externally the nest seemed to consist simply of rude spherical honey-pots in contact with one another, or connected by means of the coral-like work before alluded to, but the President thought it probable that there was comb, more or less irregular, in the interior. It was remarkable that not a single female of any of the numerous species of Trigona was known.

Prof. Westwood remarked upon the extraordinary difference of habit between the Brazilian and Australian Trigonæ; the Brazilian species made hexagonal cells in single layers, and the difference was as remarkable as if a species of Apis in England were found to make honey-pots like a Bombus instead of the ordinary nest of a true Apis. This structural modification was so great as to suggest a doubt whether Trigona carbonaria had been rightly placed in the genus Trigona.

The President also exhibited nests of Deilocerus Ellisii, *Curtis*, one of the social Tenthredinidæ: the nests had formerly been exhibited by Curtis at the Linnean Society, and were figured in vol. xix. of the Linnean 'Transactions.'

A lively conversation subsequently took place, on the origin or causes affecting the hexagonal form of the cells of bees, in which the principal participants were the President, Mr. Waterhouse, Mr. Bates and Prof. Westwood.

The President exhibited specimens of Hyponomeuta padella, which had been given to him by one of the assistants in the British Museum, and which were said to have been bred from larvæ feeding on unripe grains of corn. The gentleman in question (to whose general accuracy of observation the President bore testimony) had been walking through a corn-field in Suffolk, plucking some of the ears and eating the grain, when he noticed an unpleasant taste, and on examination found numerous larvæ feeding on the grain; he had put some into a box, and from them had emerged the exhibited specimens of H. padella. It was, however, thought probable by the Lepidopterists present that some mistake must have been made as to the identity of the larvæ from which the moths had been raised.

Mr. Bond exhibited a coloured drawing of the larva of Sphinx Convolvuli, of which

seven specimens had been taken on the 17th of September last, at St. Leonard's, feeding on the small bindweed (*Convolvulus minor*); also a specimen of the dark variety of the larva of Acherontia Atropos, found near London, and preserved by Mr. Baker, of Cambridge.

Mr. F. Moore exhibited some impressions of Indian Lepidoptera taken on wax-paper by means of pressure applied to the original specimens.

Mr. Francis exhibited specimens of Anthribus albinus, *Linn.*, taken at Folkestone in the second week of September last; and of Chrysomela fulgida, so arranged as to expose the deep red wings of that species.

Mr. M'Lachlan exhibited a collection of cases of the larvæ of various genera of Trichoptera, showing the different materials, and the different dispositions of those materials, used by the larvæ in forming their defences; some were composed wholly of vegetable matter, others wholly of shells or small pebbles, others again had these substances mixed heterogeneously; whilst one case of the genus Setodes appeared to be composed entirely of silk, without being covered externally with any other substance.

Prof. Westwood exhibited a large sheet of whitish silky matter of extreme smoothness, resembling the finest kid, which had been sent to him by Dr. Cuthbert Collingwood, and had been taken from the bottom of a biscuit-chest; the biscuits themselves were found to have been attacked by larvæ, which were described as resembling those of Diptera. The Professor, however, thought it more probable that the web was the work of Lepidopterous larvæ.

Mr. Stainton said that his first suspicion had been that the sheet in question had been made by the larvæ of Tinea granella; but the matter was more opaque than any he remembered to have seen, and which had been ascertained to be the workmanship of that species.

Mr. Jenner Weir, however, had seen pieces even more dense and opaque, which had undoubtedly been done by the larvæ of Tinea granella feeding upon grain.

Mr. Waterhouse exhibited two specimens of a species of Scymnus, not noticed in his 'Catalogue of British Coleoptera,' and read the following notes thereon:—

Note on Scymnus quadrilunulatus, Muls.

"The exhibited specimens of a species of Scymnus are from Kirby's British collection. In Kirby's Catalogue they stand as the Coccinella bis-bipustulata of Marsham (Ent. Brit. No. 46, p. 167), but upon comparing them with the specimen in Stephens' collection, which in the 'Illustrations' is said to be the Marshamian type, I find that Kirby's insect is quite distinct, it being the Scymnus quadrilunulatus of Mulsant's 'Coléoptères de France' (Sécuripalpes, p. 237, sp. 6), a species which is identified by several authors with the Coccinella quadrilunulata of Illiger.

"I have re-examined the Marshamian insect, and believe that my former conclusion respecting it is correct, *viz.*, that it is a four-spotted variety of S. frontalis, a variety which does not appear to be uncommon on the Continent, but which is apparently very rare in England, since no other British example has come under my notice than the one referred to. The statement in the 'Illustrations' and in the 'Manual,' that of the two spots on each elytron the posterior "is the largest," is incorrect, for the anterior spot is the larger.

"The Scymnus from Kirby's collection is a considerably smaller insect, being rather less than S. discoideus. It is of a short ovate form, with the elytra obtusely rounded

behind; moderately convex; well clothed with whitish pubescence; black, with the antennæ, parts of the mouth, legs and apex of the abdomen, as well as the spots on the elytra, testaceous; the femora, however, are dusky at the base. The upper surface is densely and finely punctured, but on the elytra the punctuation is rather less dense than on the thorax. The anterior spot on each elytron is moderately large and oblong, extends from the humeral callosity inwards and slightly downwards, and terminates far short of the suture; it is somewhat contracted in width in the middle, and most dilated on the inner half. The second spot is much smaller, placed about midway between the anterior spot and the apex of the elytra, and nearer to the suture than the upper spot; it is slightly transverse, broad and rounded on the side nearest the suture, and gradually contracted in width externally. Both spots show a slight tendency to a lunate form. The reflected margin of the apical portion of the elytra is rufous.

"I have seen no other reputed British examples of this species, and hope that this notice will elicit further information.

"Stephens, in his 'Illustrations' (Mand. iv. p. 393, sp. 7), very briefly describes an insect (Scymnus colon) in these terms:—'Shining black, slightly pubescent; thorax immaculate; elytra each with two small luteous spots placed longitudinally; apex of abdomen rufescent. Length 1 lin. I have seen one specimen only of this species, which was captured at Wood Ditton, May 19, 1827; Rev. L. Jenyns.' Should this be identical with the insect exhibited (and I think with Mulsant that such is the case), we have here a locality for the species."

Paper read.

Mr. Stainton read a paper "On the European species of the Genus Cosmopteryx;" this was illustrated by a single coloured figure, which, by an ingenious contrivance, was made to display the characters of and distinctions between four of the closely-allied species.

December 7, 1863.

Frederick Smith, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the respective donors:—'Proceedings of the Royal Society,' Vol. xiii. No. 58; presented by the Society. 'Journal of the Proceedings of the Linnean Society,' Vol. vii. No. 27; by the Society. 'Proceedings of the Royal Physical Society of Edinburgh,' Sessions 1858-62; by the Society. 'Bulletin de la Société Impériale des Naturalistes de Moscou,' Année 1862, Nos. 2, 3, 4; by the Society. 'The Journal of Entomology,' Vol. ii. No. 9; by the Proprietors. 'On Parallel Relations of the Classes of Vertebrates, and on some Characteristics of the Reptilian Birds;' 'The Classification of Animals based on the principle of Cephalization;' by the Author, James D. Dana, Esq. 'On the Genus Acentropus;' by the Author, Edwin Brown, Esq. 'Notes on some new or little-known species of Freshwater Entomostraca;' by the Author, John Lubbock, Esq., F.R.S., F.L.S., &c. 'Sepp, Nederlandsche Insecten,' 2e Série, Nos. 11—34; by the Author, C. Snellen van Vollenhoven, Esq. 'The Intellectual Observer,' Nos. 22 and 23; by the Publishers. 'The Zoologist' for December; by the Editor. 'The Farm and

Garden,' Vol. iii. Nos. 35, 36, 38—41 ; by C. A. Wilson, Esq. 'The Journal of the Society of Arts' for November; by the Society. 'The Athenæum' for November; by the Editor. 'The Reader' for November; by the Editor. 'Stettiner Entomologische Zeitung,' 24 Jahrg. Nos. 10—12 ; by the Entomological Society of Stettin.

Election of Member.

George Bryant, Esq., of the India Office, Victoria Street, Westminster, was balloted for, and elected a Member of the Society.

Alteration of the Bye-Laws.

Notice was given that a Special General Meeting would be held on Monday, the 25th of January, 1864, at 7 P. M., for the consideration of certain proposed alterations of the bye-laws.

Exhibitions, &c.

Mr. S. Stevens exhibited a large box of Coleoptera collected by the Rev. Mr. Gerard in the Zulu Country ; and a specimen of Polyommatus, taken in the Isle of Wight, which appeared to be intermediate between P. Adonis and P. Alexis.

Sir John Hearsey exhibited some Indian Lepidoptera, principally Noctuidæ and Geometridæ.

Mr. W. W. Saunders called attention to the injury done to an Orchid by one of the Cimicidæ: the Orchid was a Catasetum, which had been imported from Brazil about eighteen months before ; the bug was a Bryocoris, probably also an importation, but Mr. Saunders was inclined to think that it had come from Hayti, from which locality he had, only two months ago, received a collection of Orchids, among which a species of ant (Formica herculanea ?) had been found. The Bryocoris, when disturbed, exhibited extreme activity, and destroyed the plant in a manner similar to Thrips.

Professor Westwood produced a MS. entomological journal of the late John Curtis, being a volume containing a page for each day of the year, and comprising upwards of two thousand entries, written without very careful attention to grammatical rules, but with the exquisite neatness which characterized the author's caligraphy. The observations of successive years were recorded on the same page belonging to the day of the month on which they were made ; the year was entered in one column, the plant or material attacked or infested was named in a second column, and the insect attacking or infesting in a third ; these were followed by more particular details as to the nature and extent of the injury done, and generally as to the habits of the species under observation. The Professor observed that perhaps, on the whole, there was no better plan of keeping an entomological journal, but the manifest objection to it was that it was merely chronological (or rather seasonal), and there were no means of referring at once to all the observations on the same subject; but an index was required both of the attacking insects and of the objects attacked.

Professor Westwood also produced, as another Entomologico-literary curiosity, a MS. page of the Proceedings of the Norwich Entomological Society, of which the following is a copy :—

"Third Meeting. At Mr. Curtis's, December 4, 1810.

"A paper was read (No. 4) from Mr. Curtis, on the powers of sound possessed by some individuals among the Coleoptera.

"A paper was read (No. 5) from Mr. Wilkin, on the genus Geotrupes of Latreille and Duméril, defining its characters and dividing it into sections.

"A paper was read (No. 6) from Mr. Wilkin, on the Linnæan species of the Carabi, with observations resulting from an examination of the original specimens labelled by Linnæus, and preserved in the Linnæan collection now in the possession of Dr. Smith.

"Some remarks were made on the subject of Mr. Curtis's paper, in opposition to the hypothesis proposed by him, *viz.* that the sound produced by Cur. fuliginosus and others when captured arises from the friction of the abdominal segments on each other. The majority rather attributed the sound to friction of the edges of the elytra.

"Mr. Wilkin communicated to the Society the result of an experiment which he had made on Blaps lethifera. The ammoniac scent attributed to the insect by Mr. Sparshall suggested that possibly some crystallization of ammonia might be obtained from it. But after destroying a large number of specimens by hot water in a confined vessel, and thereby obtaining a strong solution of the juices of the animal, Mr. P. Taylor (who assisted Mr. W. in the experiment) ascertained by the test of a strong solution [*here a blank occurs*] that there was not the smallest portion of ammonia. By dissection, the discriminating characters of the sexes were ascertained, the male being considerably broader and shorter, the mucro of the elytra is shorter, and at the base of the abdomen is seated a small tuft of yellow hairs. In size and punctation this species varies considerably. Some specimens are smooth, others much more roughly punctured. In the collection of the late Mr. Beckwith is preserved a specimen of the male having one elytron smooth, the other so deeply punctured as to be rugulose. And among the specimens captured at the Horse Barracks by Mr. W. he was fortunate enough to meet with the female of this singular variety, which, together with some of the Carabi mentioned in No. 6, were exhibited.

"At the request of Rev. W. Kirby, of Barham, we elected him a Member of the Norwich Entomological Society."

Professor Westwood exhibited specimens of two new Coleoptera, each of such singular form as to necessitate the creation of a new genus for its reception: they were remarkable for the large size of the head in the males, and were characterized as follows:—

Genus Cephaloncus, *Westw.*

Genus (vel potius subgenus) novum in familia Malachiorum, Cephalogoniæ, *Wollast.*, proximum; differt capite in maribus prothorace fere duplo latiori, postice excavato, excavatione latâ, antice trisinuatâ, in medio tuberculo minuto obscuro instructâ; facie in utroque sexu antice brevi, nec conica; antennæ breviores, simplices, articulo 2do minuto, 3io et 4to sequentibus haud multo brevioribus. Prothorax brevis, late cordatus. Palpi labiales articulo ultimo subovali (nec subsecuriformi). Elytra modice elongata, apice in singulo rotundato.

Cephaloncus Capito, *Westw.*

Lutescens, nigro-varius. Capite nigro, excavatione ♂ luteo variegata. Prothorace fulvescenti, macula magna media, alterisque duabus parvis lateralibus (interdum confluentibus). Elytris luteis, humeris late cum scutello maculisque duabus magnis subapicalibus nigris.

Long. corp. $\frac{3}{4}$ lin.

Habitat in Insula Canariensi. D. Wollaston.

Genus Aglycyderes, *Westw.*

Genus anomalum, et quoad affinitates dubium, quamvis Anthribidibus, ut mihi videtur, proximum. Corpus oblongum, depressum, obscurum, setosum. Caput in maribus ante oculos prominentes in cornu utrinque productum, postice in collum angustum contractum. Antennæ rectæ, filiformes, 11-articulatæ. Mandibulæ breves, crassæ, trigonæ, obtuse tridentatæ. Maxillæ planæ, subtrigonæ, margine interno spinis rigidis curvatis armatæ. Palpi maxillares abbreviati, conici, articulis 3 basalibus brevissimis. Labium rotundatum, corneum, valde setosum. Palpis labialibus minimis, conicis. Prothorax subquadratus, lateribus rotundatis. Pedes breves, crassi, tarsis brevibus, articulis 2 basalibus subbilobatis, 3tio minimo nodiformi, 4to longiori clavato, unguibus 2 simplicibus instructo.

Aglycyderes setifer, *Westw.*

Obscure fusco-nigricans, punctatus; elytris striato-punctatis, punctis setas albidas emittentibus.

Long. corp. lin. 1.

Habitat in Insula Canariensi. D. Wollaston.

Mr. W. F. Kirby produced a copy of Dr. Loew's recently-published work on the European Trypetidæ, illustrated with twenty-six enormous photographic plates of the wings.

Captain Cox sent for exhibition a series of admirably-executed photographic pictures of groups of insects, accompanied by the following:—

Notes on the application of Photography to Entomology.

"I beg to forward a few notes on the method of applying Photography as a means of illustrating single specimens or cabinet drawers of insects; and I believe from the success that has attended my first effort that I do not over-estimate the great value this art will ultimately prove in rapidly delineating, with most perfect accuracy, either single specimens or groups of insects; and I also believe we are on the threshold of a very marked period in the advance which the science of Natural History is now likely to take, aided by a power so quick in action, so accurate in detail, and so exquisitely beautiful in its general character as Photography; and I think before long the appliance of this new Science will enable us to have our entomological *cartes de visite* in the form of photographic groups of classes of insects, according to the speciality of the collector's taste; and I am led to believe that, as we progress in this knowledge, all who have fine collections, and have also the command of moderate means, will not rest satisfied until they have had them copied by means of Photography, thus handing down to posterity a faithful record of what once existed,—the result of long, patient and assiduous collecting, of untiring zeal, of minute and close application. Again, as the knowledge and appliances of the photographic art are now so generally diffused over the civilized world, it may occasionally occur that rare or interesting specimens of insects may be collected, and yet no means of preserving them be at hand; as from very many causes, unless the greatest care and attention be constantly used in overlooking a collection (so perishable as insects are in a warm climate), they are liable to be destroyed. Now, if these were copied by means of the camera, which would be but

the affair of a few minutes, and a trifling expense, we should then possess forms and markings which no labour of the engraver's tool could supply, even if time alone did not at once offer an insurmountable difficulty. Forms obtained in perfection and in high relief, in fact, the insects, as seen in the accompanying proofs, seem literally to stand out from the flat surface of the paper: minute markings are clearly defined, and although we lose colour, yet there is an approximation to it in many instances which is very remarkable. I may call attention to the Atlas and Strix major, and also to the singular appearance of the green under the wings of Pontia Rapæ, P. Napi and P. Daplidice; in fact, the insects seem to possess in the plate a faint tinge of green. But this art is more particularly serviceable when we wish to illustrate the difficult forms we often meet with among the Coleoptera. Here it is of the highest value, for whatever the eye can see, Photography will unerringly pourtray, and when once we have a perfect drawing, with its lights, shades and half tones, the engraver (should his assistance be required) will find his labours materially lessened, and a very large amount of time saved.

"Again, to illustrate its easy applicability, I may mention that the accompanying drawings, with the exception of the one of Ornithoptera, were prepared to be exhibited at the late Meeting of the East Kent Natural History Society, which was held on Tuesday, the 24th of November. I prepared my plates on Saturday, the 21st, and printed and toned them on the following Monday; therefore in the short space of two days a series of drawings was finished which no art of the engraver can approach, either for fidelity or beauty. Even this did not occupy two days; the plates and prints were only taken whilst the light was good. But to still more clearly illustrate the advantage and rapidity of this method of copying specimens, I may mention that Mr. W. W. Saunders kindly attended the late Meeting of our Society in Canterbury, and communicated a paper on the Ornithoptera: the next morning he drove over to see me. At half-past ten I took two plates of his beautiful box of Ornithoptera, a copy of which is forwarded; at a quarter past eleven he was obliged to leave to meet the train, on his return home: thus in this short space of time we were enabled to obtain a photographic picture of a most beautiful and rare box of butterflies, and also to retain for our Society a happy reminiscence of a most agreeable evening passed with one of the late Presidents of the Entomological Society.

"I now hope that sufficient has been said to point out how useful the photographic art may be in connection with the study of several branches of Natural History, and more particularly with that of Entomology.

"The following apparatus is what I have used. Mr. Thomas Ross's new triplet lens, well stopped down; it covers a plate of ten inches by eight. The camera is by Burfield and Roach, expanding, and lined with black cotton velvet. The bromo-collodion is by Mr. Linford, of Canterbury. This collodion works quickly, is very clean, and is remarkably strong and tough. My developer is made as follows:—

Sulphate of iron . . .	2 drams	
Nitrate of potash	2 „	1 scruple.
Acetic acid	2½ „	
Spirit of wine	5 „	
Distilled water . . .	10 ounces.	

I clean the plates with a solution of cyanide of potassium, the usual form.

"*Method of arranging the Object.*—As a rule all light-coloured insects ought to be set on a dead black paper, dark insects on a white one. Insects ought to be arranged if possible in some measure according to colour and texture, thus·

"*First*, colour. Black velvety wings are good absorbers, but bad reflectors of light, therefore they will require about five times the length of exposure to that of a white wing. Yellow colours are most difficult to take; they require a great deal of forcing, even more than the black: I am not yet in a position to give any accurate time, as the yellows vary from the pale lemon to the deep orange; but, as a rule, I should expose two minutes longer than the black; thus, if in a box of insects, black, white and yellows are mixed up, it is extremely difficult to obtain a satisfactory result, as may be seen in No. 1 plate, containing the swallow-tail, the Bath white and orange-tip. The swallow-tail is not brought out, whilst the whites and greens are perfect; the orange is blackish.

"*Secondly*, texture. The wings of the Coleoptera are mostly glazed, therefore good reflectors. These insects take admirably, as in plate 7; all their salient points come out remarkably well, and stand sharp and clear. In these insects form is everything, and colour next to nothing; so that by Photography we are enabled to trace the most minute variations, if the insects be correctly focussed. The clear-winged insects are also beautifully brought out by this Art,—the Neuroptera especially,—but care must be taken to have a back-ground suitable for throwing up the exquisitely delicate tracery of the wings; the Orthoptera also come out well. Specimens of these two insects are seen in plate 7.

"*Size of Specimens.*—This is a very important consideration. If we wish to exhibit a single specimen, it ought to be taken as near the full size as possible, but where a series is to be photographed the expense must be kept down by diminishing the size (as seen in plate 5), for here we have a specimen of the largest moth known, which would have occupied more space than the whole plate, yet brought out so clearly and forcibly in the reduced size as to be in every way satisfactory, for I think so long as we can have all the markings well developed, it is not of much consequence that the actual size should be adhered to.

"In conclusion I beg to state that I shall be happy to answer any communications forwarded to me on this subject."

The President read the following note:—

On the Nest of Trigona carbonaria.

"At the November Meeting of this Society I exhibited a nest of Trigona carbonaria, a stingless honey bee, from Queensland, Eastern Australia. I have had opportunities since that time of more carefully inspecting the structure of the nest, and I think the results may be sufficiently interesting to lay before the Meeting. On cutting away a portion of the back of the box in which the nest was built I at once obtained a view of the interior. The spaces between the combs, and also every hole and crevice, were crammed with the bodies of dead bees; I obtained from four to five hundred, all of which I carefully examined in the hope of finding a female. All appeared to be ordinary working bees; I could not detect any difference among them. The combs in the nest of Trigona carbonaria are arranged precisely similar to those of the common wasp, that is, they are single, placed horizontally, and attached, or rather kept apart from each other, by short columns or foot-stalks; the mouths of the cells are, as in the

nest of the wasp, downwards. The cells were entirely filled with brood; I could find very few not occupied. None of them contained honey; all the honey collected I concluded is always stored in honey-pots at the foot of the nest. As far as I could number the honey-pots I counted about 250.

"In one particular the nest of Trigona differs materially from that of the wasp in the mode of its construction: the combs are built over each other, the lower comb being first constructed, so that it increases in size upwards, that of the wasp being enlarged downwards. Thus it will be seen at once that the arrangements of the hive of Trigona are very different from those of the hive bee. In the latter case the combs consist of a double series of cells, and are suspended vertically, and on the receptacles proper of the honey itself as well as of the brood. I am, however, inclined to the opinion that the hive of Trigona contains several prolific females; the accounts given of the multitudes inhabiting some nests is too great, I think, to render it possible that one female could produce them all. Mr. Stretch described a hive that he saw occupying the interior of a decaying tree that measured six feet in length, and the multitude of bees he compared to a black cloud. That there is more than one female in the hive of Trigona is, I think, rendered almost certain, from the fact of M. Guérin having found six in a nest of Melipona fulvipes, a genus very closely allied to Trigona.

"In Mr. Gosse's 'Naturalist's Sojourn in Jamaica' is a very interesting account of a nest of a species of Trigona. It is extracted from the journal of his friend Mr. Hill, who writes as follows:—'The wax of these bees is very unctuous and dark-coloured, but susceptible of being whitened by bleaching. The honey is stored in clusters of cups, about the size of pigeon's eggs, at the bottom of the hive, and always from the brood-cells. The brood-cells are hexagonal,—they are not deep, and the young ones, when ready to burst their cerement, just fill the whole cavity. The mother bee is lighter in colour than the other bees, and elongated at the abdomen to double their length.'

"The wax of which the nest of Trigona carbonaria is constructed differs in quality materially from that of the hive bee. Mr. Woodbury, who obtained the nest from Australia, had tested it in some degree, and scarcely considered it to be properly wax, taking that of the hive bee as the standard of quality. On holding it in a flame it does not melt as bees'-wax does, but ignites and burns with a red flame. If analysed it would probably prove to be composed principally of resinous gum."

During the Meeting the Secretary received from Charles Williams, Esq., Resident Surgeon of the Norfolk and Norwich Hospital, a living female specimen of the common wasp, which had on the previous day (Dec. 6th) flown into Mr. Williams' bed-room.

The following was communicated by Mr. C. A. Wilson, of Adelaide:—

Notes on the South-Australian Calosoma Curtisii.

"The genus Calosoma being a remarkable one in a favourite family, I have thought that a few notes, from personal observation, on the economy of our only known species would be interesting. (There is said to be another species of Calosoma native of our province, smaller and of a black colour, but I cannot hear of any one who either has found or possesses it.) C. Curtisii was first found about five years after the establishment of this colony. In the month of November, 1841, they were brought singly into town from the North (as a few miles north of Adelaide was then called), being picked up by carters as 'something curious.' I was asked to name the insect

(being, I believe, then the only entomologist in the colony), and found it a Calosoma. The following year a few more were found, and three or four were also said to have flown into one of the shops in Adelaide at night, attracted by the oil lights.

"After this came a lull for a few years, during which this much-prized beetle was rarely seen; but in 1851 several were again observed, and in the following year they immensely increased, and appeared to reach in numbers their culminating point, for in 1853 and since they seemed gradually to decrease again. Last year (1862) they were rather more numerous than usual, and about two dozen were taken altogether, in the same spots as those of previous years. Their time of appearance is almost always through the month of November, and so strictly is this the case that they are never looked for and seldom seen even a few days before or after that month. On one occasion, however, I found a solitary one a few days before Christmas.

"The habitat of these beetles has been hitherto exceedingly local, first a few miles north of Adelaide, and since almost confined to the foot of the North Adelaide hills; thence spreading to the park lands between them and South Adelaide, and occasionally to adjacent outskirts of the town. I hardly ever heard of their being found anywhere else, though on one occasion I took one myself thirty-two miles north, or six beyond Gawler Town, in a garden. My idea is that once found in North Adelaide and neighbourhood, they were retained there by the quantity of cow-dung scattered about, under the drying pieces of which they frequently hide. In the above places they kept almost exclusively to the foot-paths, and were thus at once perceived: these they were seen often crossing briskly enough, but not so swiftly as to prevent their being easily taken. Occasionally I have perceived one at a distance, standing motionless in the middle of a path, the sunlight playing brilliantly on his polished elytra, and not moving till I was close upon him. They are continually trodden under-foot, being considered from their aspect 'venomous'! They evidently avoid the grassy spots, and come out into 'the clearings,' as the weeds and grass seem to incommode them and prevent their walking. I have never in a single instance known them attempt to fly, nor ever observed them on the wing, though they have ample organs for that purpose.

"These beetles are fond of all damp situations, but still do not like rainy weather, which seems to clog them; and again the hot weather of December I think but few of them could stand, so the term of their full-fledged existence is but of short duration. Their food, I think, must be the different kinds of caterpillars about in October and November, and occasionally those naked ones (of the Noctuidæ) found under cow-dung, where I have sometimes observed the beetle. They often exude too, when caught, a brown liquid from their mouths, smelling strongly of stercorarious matters.

"The larva I have enclosed is one of the larger ones I have taken, shrunk, of course, a little in size: it was probably full grown. I never found any of these larvæ till the year 1852, when the greatest number of the imago was taken; all were found at the same places as the beetles, at the same time, and nearly all of their full size. These facts are singular, and seem to prove that these insects remain in either the larva or pupa state several years, and then are all perfected at the end of so many years at the same time. I have seen the perfect beetle and full-grown larva together under cow-dung, and on the surface of the ground. The length of the pupa-condition (whose place of rest is, I suppose, beneath the surface of the ground) I know not yet. There has lately been a rumour of these Carabidæ being found in the far north (from three to six hundred miles inland), but this has not been authenticated.

"The following notes are copied, almost *verbatim*, from those I made at the time in my entomological note-book:—

"*Calosoma Curtisii.*—Nov. 1, 1852. The first of the season taken and brought to me; smallest had yet; very bright green; found below N. Adelaide hills.

"Nov. 2. Found self another Calosoma in foot-path between N. and S. Adelaide, in Square near the Church; also small; running quickly.

"Nov. 3. Found three more Calosomas, foot of N. Adelaide hills, 4 P.M.; running across paths. (Caterpillars of Plusia abundant).

"Nov. 5. Five Calosomas; two in morning; three in afternoon; morning at same place—ford or crossing place.

"Nov. 6. Four more Calosomas; always found at foot, never top of hills; always in paths with grass at sides; all those found last few days full-sized.

"Nov. 8. Four more Calosomas; same places.

"Nov. 9. Five more, one of these for first time *in* grass, and not very near path.

"Nov. 10. Extraordinary day for Calosomas; found altogether twenty-four in compass of half a mile.

"Nov. 11, 12 and 13. Respectively four, two and one of these beetles.

"Nov. 15. Two Calosomas; one a female burrowing in ground, as if to lay.

"Nov. 16. Four more Calosomas, under cow-dung in park lands N. Adelaide; two under one piece; also two large larvæ, first I have seen, probably larvæ of these beetles; very active indeed, jumping about when touched; exuded a dull white matter. Colour dull black with red bands. (Figure here drawn). In evening of same day one Calosoma flew into room.

"Nov. 17. Another Calosoma-larva under cow-dung.

"Nov. 19. Saw the curious larva of the Calosoma crossing the road quickly, nearly as quickly as the beetle itself, in same spot as before—*i.e.* near ford.

"Nov. 20. Another larva, same kind, crossing the road."

Paper read.

Mr. M'Lachlan read a paper "On the Types of Phryganidæ described by Fabricius from the Banksian Collection." In this paper the Limnephilus intercisus of Walker was identified with the Phryganea irrorata, *Fabr.*, and the Dipseudopsis capensis of Walker with the Phryganea notata, *Fabr.*, it being conceived that Fabricius was in error in stating that the latter was from North America; and the third type-species, P. signata, *Fabr.*, was referred to the genus Brachycentrus of Curtis, possibly B. incanus of Hagen.

January 4, 1864.

Frederick Smith, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the respective donors:—'Sitzungsberichte der Königl. bayer Akademie der Wissenschaften zu Münnchen,' 1863, Heft 4; presented by the Akademie. Hewitson's 'Exotic Butterflies,' Part 49; by W. W. Saunders, Esq. 'The Entomologist's Annual' for 1864; by the Editor. 'The Zoologist' for January; by the Editor. 'The Intellectual Observer,' No. 24; by the Publishers. 'The Athenæum' for December; by the Editor. 'The Journal of the Society of Arts' for December; by the Society. 'The Reader' for December; by the Editor.

The following addition by purchase was also announced:—H. von Kiesenwetter, 'Naturgeschichte der Insecten Deutschlands.' Erste Abtheilg. Vol. iv. Part 4.

New Member.

Herr G. Semper, of Altona, was ballotted for and elected a Foreign Member.

Alteration of Bye-Laws.

A requisition, presented to the President and Council, signed by six Members, was read; and it was announced that, in compliance therewith, a Special General Meeting would be held on the 25th of January, 1864, at 7 p. m., for the consideration of certain alterations in the Bye-Laws specified in the Requisition, and which were taken as read to the Meeting.

Exhibitions, &c.

The Secretary read a communication from the Lords Commissioners of the Admiralty, enclosing a copy of a circular letter from the Governor of St. Helena, respecting the ravages committed in that island by white ants. It was therein stated that the insects were, it is supposed, accidentally introduced from the coast of Guinea about twenty years since; that almost every dwelling, store, or shed, in Jamestown, containing nearly 4000 inhabitants, has been seriously injured by them, involving, in many instances, complete ruin and abandonment, and imperilling the lives of large numbers of the poorer classes, who are still living in houses of doubtful security: the Governor was especially anxious for detailed information as to the most successful mode of finding the ants' nests and effectually destroying those receptacles, and as to the description of timber which has proved to be the least susceptible of injury from the insect, and the average market price of that timber at per cubic foot.

Gen. Sir J. Hearsey, after detailing some of his own experiences in connexion with white ants in India, said that the nests must be sought in the plains, for if once the ants effected a lodgment in the walls of a house, the walls themselves must be taken down before the insects could be eradicated. He thought the best preventative of their attacks was to steep the timber, before building, in a solution of quick-lime, and completely saturate it therewith; whilst store-boxes, furniture, and small articles should be painted or coated over with a solution of corrosive sublimate.

Mr. E. W. Robinson said that, on the Indian railways, the plan was to make the sleepers of kyanized timber, *i.e.* timber to which a solution of creosote had been applied; it was, however, found insufficient merely to dip the wood or coat it over with the solution, but the whole block must be impregnated with the creosote, which was forced through the timber by the application of hydraulic pressure.

Mr. Bates said that the houses on the banks of the Amazon were not much infested with white ants, which he attributed, in a great measure, to the use of a very hard wood, called Acapù: it was the habit to rest store-boxes, &c., on sleepers or cylindrical pieces of that wood, which in many cases afforded sufficient protection. When the white ants had effected an entry into the walls (which in the Amazon country were principally composed of upright posts, with cross laths, filled up with mud, and covered with lime or cement), he had found it an unfailing remedy to fill up the holes in the walls with arsenical soap; pure oxide of arsenic might be used, but that of course was attended with danger: the arsenical soap was cheap, and might be diluted with water, and boxes, &c., washed over with the solution. The most effective method would doubtless be to completely saturate and poison the timber, as General Hearsey had mentioned with respect to the quick-lime.

A conversation subsequently took place on the habits of the Termites, the principal speakers being Gen. Hearsey, Mr. Bates and Prof. Westwood. In the course of the discussion Mr. Bates expressed (though with some hesitation) an opinion that the copulation of white ants occurs on the surface of the earth, and not, as was commonly supposed, in mid-air.

Mr. Newman exhibited a series of coloured drawings, life-size and magnified, of larvæ of the genus Anticlea, admirably executed by Mr. Buckler.

Captain Cox also exhibited a large number of drawings of Lepidopterous larvæ, exquisitely coloured by Mrs. Charles Cox: he also read the following:—

Notes on collecting Lepidopterous Larvæ.

"I have now for some years been collecting larvæ of Lepidoptera for Mrs. Charles Cox to colour, and I may mention that in our neighbourhood there has been almost an entire failure, even of the most common kinds, during the past two years, so that we have done comparatively little.

"To those unacquainted with larvæ it may appear an easy matter to collect them and recognize their forms; but so much do many larvæ resemble each other that experience shows that it requires a large amount of study and constant practice to be able only approximately to say to what kind of moth such and such a larva belongs. We have found that no hitherto-known scientific arrangement assisted us in deciphering rapidly, after a hard day's or night's beating and collecting in a favourable season, the various captures made; so we have been obliged to have recourse to a conventional system, which has assisted us materially.

"We divide all known larvæ into three great classes: the Hairy or Spined, the Smooth-skinned, and the Looper.

"The Hairy or Spined we subdivide into those thickly covered, and those moderately covered or tufted; (we do not take account when the hair is only sparsely seen). Each of these subdivisions is again subdivided into the colours, brown or reddish, black or very dark, and yellow, green or gray.

"The Smooth-skinned are divided into those with a caudal spike, and those without;

these are subdivided under colours, green or yellow, brown or reddish, black or very dark. Each of these divisions is again subdivided into the striped, the lined longitudinally, and the plain.

"The Loopers are divided into those with 10 legs (perfect loopers) and those with 12 legs (imperfect loopers); and these are subdivided in the same manner as the two divisions of the Smooth-skinned.

"The following Table exhibits these divisions, and an index of larvæ kept in this form enables us rapidly to sort our captures and to find whether we have copied them or not, or if they have been described by others:—

"Larvæ of Lepidoptera.

I. Hairy or spined.

1. Thickly covered.
   - A. Brown or reddish.
   - B. Black or very dark.
   - C. Yellow, green or gray.

2. Moderately covered, or tufted.
   - A. Brown or reddish.
   - B. Black or very dark.
   - C. Yellow, green or gray.

II. Smooth-skinned.

1. With caudal spike.
   - A. Brown or reddish.
     - *a.* Striped.
     - *b.* Lined longitudinally.
     - *c.* Plain.
   - B. Black or very dark.
     - *a.* Striped.
     - *b.* Lined longitudinally.
     - *c.* Plain.
   - C. Yellow or green.
     - *a.* Striped.
     - *b.* Lined longitudinally.
     - *c.* Plain.

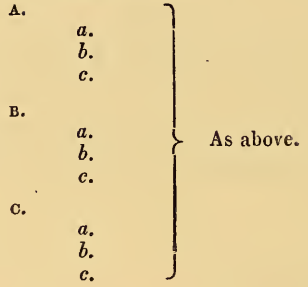
2. Without caudal spike.
   - A.
     - *a.*
     - *b.*
     - *c.*
   - B.
     - *a.*
     - *b.*
     - *c.*

   } As above.

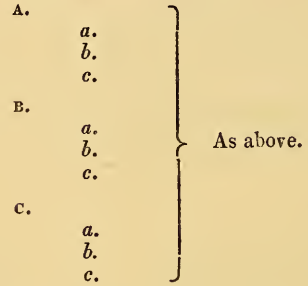
   - C.
     - *a.*
     - *b.*
     - *c.*

III. Loopers.

1. With 10 legs (perfect loopers).



2. With 12 legs (imperfect loopers).



"We keep a book in which is entered a description of the larva to be drawn; to this a numeral is attached: the larva is placed in a case, and on this, as well as on the drawing, the same number is marked. We then patiently await the arrival of the imago, to verify the name of the larva.

"In prosecuting our work, no name is affixed to our list until we are certain of the insect by its appearance in the breeding-cage. It is this great anxiety to verify, by actual fact, every insect that we find or is sent to us, that causes such an infinity of trouble; for it is painful, from one cause or another, to find how often our hopes are baffled by the untimely death of the larva or pupa, and then another year or two must pass away before we may obtain specimens again. Thus we have now considerably more than a hundred drawings unnamed, and consequently unregistered in the finished series.

"In breeding larvæ, some feed only at night, others in the direct sun-light, others at any time: care must be taken to favour each peculiar habit; if not, failure will ensue. Also, some bury themselves in the earth, either to hide or to change into the pupa state, others spin a cocoon on a branch, others on the surface, collecting the loose material around; in every case the insect ought to have the means of following its natural instinct. Thus, peat or broken turf and white sand make a good soil for the larvæ to retire into; this ought to be covered with close clean moss, free from insects, and kept moderately damp, and with a few upright pieces of wood for the insect to stretch itself upon after feeding, as we observe it is the habit of the nocturnal feeders to lie at full length for a short time after their evening diet.

"In seeking nocturnal feeders, generally but few make their appearance until about an hour after sunset; on the low herbage and banks the lamp and bent position must be the order of search; on spare and leafless brushwood the light will detect the insect, either feeding or at rest; but amongst brushwood an inverted umbrella, when it can be used, will save much time, and a quick tap with a stick will cause the larvæ to drop off into it. The lamp should be strapped round the waist. Many small larvæ, after feeding, hang suspended by a silken thread; all these the umbrella will receive.

"During the night or day the quick eye must be ever ready to see the nibbled leaf, the exuvial deposit, the web, or any other sign of insect presence. It was by examining the entrance of a wood, by the light of my lamp, that I discovered a piece of exuviæ; on further search I came upon a number of larvæ of Vanessa Cardui, before which time I had never seen in this neighbourhood the caterpillars, and the perfect insect but once. I found them feeding on the cudweed (*Gnaphalium sylvatica*): I have not seen this given before as its food-plant.

"In collecting by day, a large sheet spread under the trees at the proper season of the year, and the trees beaten by a long pole, will generally send down many larvæ.

"Thus the sheet and umbrella by day, the umbrella and lamp by night, a quick eye and a strong frame, will be sure to meet with success.

"There are other larvæ, some of which mine in the leaves, others in roots or stems of plants, or enclose themselves by drawing the ends of a single leaf or many leaves together. There are also many larvæ that rarely appear above ground: these are to be obtained only by digging them out; therefore, whenever you have an opportunity, ask the men turning up the soil to save all the 'bugs' and 'slugs' they find; for by these names only are they known by our unenlightened clodhoppers.

"Mrs. Charles Cox has now completed 170 coloured drawings of larvæ, the names of which are correctly authenticated, with about 120 not yet named. We are most anxious to continue our work, and we shall be indebted to our entomological friends if they will contribute to our wants. I need not say how pleased we shall be at all times to exhibit the progress of our work, and to forward lists to any Members of our Society who may desire to give a helping hand."

Prof. Westwood exhibited a selection, containing several novelties, from a collection of Coleoptera sent to this country from the River Shire by the Rev. Henry Rowley (attached to the Oxford and Cambridge Mission to the Zambesi); and remarked upon the identity of many of the insects from Zambesi with those from Mozambique. One of the new species exhibited, belonging to the Cetoniidæ, was very remarkable for the variation in colour in the different individuals.

Prof. Westwood also exhibited a specimen of Hylotorus bucephalus, *Schönh.*, one of the Paussidæ; and read the following descriptions of three new species of that family:—

1. Cerapterus Kirbii, *Westw.*

Subangustus, prothorace capite vix latiori, subquadrato, angulis anticis rotundatis, elytris pone medium latioribus; glaberrimus et lævissimus; capite inter oculos bi-impresso; antennarum clava 9-articulata, subangusta, lateribus parallelis, articulo basali clavæ parvo; prothoracis lateribus acute marginatis; rufo-piceus, prothorace rufescenti, lateribus elytrorum cum macula ovata prope angulos

posticos, apicibus, suturaque lutescentibus; femoribus anticis subtus concavis; pedibus omnibus (tarsis piceis exceptis) corporeque subtus magis rufescentibus, nitidis.

Long. corp. lin. $3\frac{1}{3}$.

Habitat in Natalia. D. Guienzius. In Mus. Hopeiano Oxoniæ.

2. Paussus Spencii, *Westw.*

Oblongus, subdepressus, subnitidus, castaneo-rufus; elytris (basi apiceque exceptis) nigris; minute punctatus, punctis setas luteas emittentibus; capite antice emarginato et impressione longitudinali notato; antennarum clava reniformi, subdepressa, margine antico acuto, postico supra in medio impressione semiovali distincto; prothorace capitis latitudine, bipartito, angulis lateralibus partis anticæ rotundatis, disco hujus partis inermi; medio prothoracis excavatione profunda, impresso; elytris subangustis; femoribus tibiisque omnibus compressis sublatis.

Long. corp. lin. $2\frac{3}{4}$.

Habitat in India Orientali? In Mus. Hopeiano Oxoniæ.

3. Paussus Curtisii, *Westw.*

Elongatus, subcylindricus; lævis, subopacus, totus obscure rufus; antennis pedibusque granulatis; capite supra lineis duabus angulato-elevatis longitudinalibus anticis, alterisque duabus obliquis verticalibus (tuberculum medium includentibus) carinato; antennarum clava gracili, cylindrica, apice incrassato, subclavato et 3-denticulato; prothorace bipartito, parte antica in medio canaliculata, margineque postico acuto; impressione magna quadrata mediana ad latus utrinque producta; elytris singulis prope marginem lateralem tuberculis duobus glabris (hoc ante medium, illo versus angulos posticos) instructis; tibiis omnibus subangustis, subcylindricis.

Long. corp. lin. 4.

Habitat in Natalia. D. Gerrard. In Mus. Hopeiano Oxoniæ.

Paper read.

Prof. Westwood read a paper entitled "Descriptions of new Lucanoid Coleoptera," supplemental to his recent Memoir on Lucanidæ published in the 'Transactions'; the species described were all exotic, and illustrated with figures.

New Part of the 'Transactions.'

A new Part of the 'Transactions' (Third Series, Vol. i., Part 8), being the fourth quarterly Part for 1863, was on the table.

Special General Meeting.

January 25, 1864.

Frederick Smith, Esq., President, in the chair.

A Special Meeting was this day held, pursuant to notice, for the purpose of considering certain proposed alterations in the Bye-Laws, the objects of which were (1) to change the title of the Curator to that of Librarian, (2) to transfer to the Librarian certain duties hitherto performed by the Secretary, (3) to abolish the Library and Cabinet Committee, (4) to abolish the Publication Committee—and to vest in the Council the powers and duties of both those Committees, and (5) to repeal chap. XVII. sec. 3, whereby residents in the United Kingdom are excluded from Honorary Membership of the Society.

The alterations necessary for effecting the first object were proposed by Mr. Dunning, and seconded by Mr. May; that for effecting the second object was proposed by Mr. Dunning, and seconded by Mr. Grut; those necessary for and consequent upon effecting the third object were proposed by Mr. Dunning, and seconded by Mr. Edward Sheppard; those necessary for and consequent upon effecting the fourth object were proposed by Mr. Dunning, and seconded by Mr. Wilkinson. The above were carried without division.

The repeal of chap. XVII. sec. 3, was proposed by Mr. Pascoe, and seconded by Mr. Baly. The Meeting was addressed on this question by Mr. Dunning, Mr. McLachlan, Mr. Edward Sheppard, and Mr. Waterhouse; and by Mr. Pascoe in reply.

On a division the numbers were—For the motion, 6; against it, 14. The motion was consequently lost.

Annual Meeting.

January 25, 1864.

Frederick Smith, Esq., President, in the chair.

An Abstract of the Treasurer's Accounts for 1863, and the Annual Report of the Council on the general concerns of the Society, were read.

The following gentlemen were elected Members of the Council for the ensuing year:—Messrs. Bates, Rev. Hamlet Clark, Dunning, Grut, McLachlan, May, Pascoe, Edwin Shepherd, Frederick Smith, Stainton, Samuel Stevens, Alfred R. Wallace, and J. Jenner Weir.

The following Officers for the ensuing year were then elected:—Mr. Stainton, President; Mr. S. Stevens, Treasurer; Messrs. Shepherd and Dunning, Secretaries; Mr. Janson, Librarian.

The retiring President delivered an elaborate Address, at the conclusion of which a vote of thanks to Mr. Smith for his uniformly courteous conduct in the chair, and for his constant attention to the affairs of the Society during his biennial Presidency, was carried by acclamation. The vote was accompanied by a request that the Address might be printed in the 'Journal of Proceedings.'

The President returned thanks; and a complimentary vote to the other Officers and Members of Council for 1863 was subsequently carried and duly acknowledged.

Report of the Council for 1863.

In accordance with the Bye-Laws the Council presents to the Society the following Report:—

The most important event of the past year has been the disposal of the Collections of British Insects. This step was not taken without much deliberation, and extraordinary measures were adopted to ascertain the feeling of both Members and Subscribers before the question was finally submitted to a Special Meeting. In pursuance of the decision of that Meeting, the type-specimens have been transferred to the British Museum; the residue of the Collections and the Cabinets have been sold by public auction. We feel assured that by ceasing to attempt that to which our present resources are inadequate, and by restricting our expenditure to the extension of the Library and the publication of valuable Entomological Memoirs, we are doing the best that our financial position allows to promote the objects for which the Society is constituted.

Many precious works have been presented to the Library, and important additions have also been made by purchase; a considerable sum has been expended in binding numerous volumes, and (what was much required) a handsome acquisition to the Society's Apartments has been made in the shape of a new mahogany book-case.

During the past year we have done honour to ourselves by adding to our roll of Honorary Members the names of Hagen, Lacordaire, and Leconte. But we regret to announce a diminution in the number of our Ordinary Members and Subscribers. We have lost four Members and five Subscribers—nine in all, of which three vacancies have been caused by death, and six by resignation. On the other hand we have elected five Members and one Subscriber: but this leaves a resultant loss to the Society of three Contributors. And here it may not be amiss to remind you of how small a number our body is really composed: at the present moment the List contains the names of 111 Members and 32 Annual Subscribers—143 Contributors in all; a number which seems to show that the metropolitan Society is scarcely in the receipt of that amount of support which it has a fair right to expect from the Entomologists of the United Kingdom. Under such circumstances the secession even of three members is to be deplored: but we would fain hope that by their ardour and enthusiasm our recruits will more than supply the places of the deserters, and that, by the earnest endeavours of those who have already joined our standard, many others may be induced to enrol themselves in our ranks.

We have published four Parts of 'Transactions,' comprising nineteen Papers, illustrated with ten Plates. We have also completed a work which was begun in the previous year, *viz.*, the making up into volumes the entire stock of the Second Series of the 'Transactions.' This proved to be a work entailing large expense and considerable trouble; some of the Plates had to be engraved afresh, and additional copies of nearly all of them had to be printed. But the whole has happily been accomplished, and the Society has been enabled thereby to satisfy its obligation of supplying the 'Transactions' to numerous Foreign Societies and Honorary Members whose

claims had been allowed to lie dormant for years, and whilst fulfilling its duty of rendering accessible to the public the Memoirs entrusted to it for publication, it has converted into vendible volumes what before were unproductive sheets. In fact, the outlay incurred is not to be regarded as so much capital sunk, but as an investment in a valuable property which will yield a remunerative return.

While thus dealing with the 'Transactions' of the present and the past, we have not been unmindful of the future. A short time will now suffice for the production of Major Parry's "Catalogue of Lucanoid Coleoptera," a work of such dimensions as to entitle it to publication as a separate Part, complete in itself. And the Council has great pleasure in announcing that arrangements have been made for the description by Mr. Pascoe of the vast collection of Longicornia brought home by Mr. Wallace, comprising upwards of 800 new species and not less than 100 new genera; these descriptions will be illustrated with numerous Plates, and will be published in separate and independent Parts consecutively paged, so as ultimately to form an entire Volume of the 'Transactions.' A work of this magnitude, executed in the style we have a right to expect from Mr. Pascoe, will form one of the most important contributions to Coleopterology which has appeared in the Annals of any Entomological Society.

At the last Anniversary the Assets of the Society were £109 14*s.* 0*d.* Consols, and a true balance of £34 8*s.* 4*d.* in hand. The Abstract of the Treasurer's Accounts for 1863, which has been read to the Meeting, shows our present Assets to be £109 14*s.* 0*d.* Consols, and a true balance of £24 11*s.* 9*d.* in hand. Notwithstanding therefore the intimation conveyed in the Report of last January, as to the probable diminution of the reserve-fund, our disbursements for the year have exceeded our receipts by £9 16*s.* 7*d.*, and no more. The sum derived from the sale of the Collections was more than sufficient to meet the extraordinary expenses above alluded to; so that in spite of an unusually large outlay on the Library, and an expenditure fully equal to the average on the current 'Transactions' and 'Journal of Proceedings,' we are still able to show a balance in hand and our reserve-fund intact. The Accounts for 1863 may be exhibited (in round numbers) as follows:—

RECEIPTS.	£	PAYMENTS.	£
Sale of Collections	127	Second Series of 'Transactions'	115
„ 'Transactions'	53	Third „ „	95
Annual Contributions	103	Library	60
Arrears of ditto	20	Rent	45
Admission Fees	19	Curator's Salary	18
Composition of a Life Member ...	15	Postage, Stationery, Attendance, and General Management	15
Interest on Consols	3	Fire Insurance	3
Donations	24	Tea, &c., for 13 Meetings ...	13
	£364		£364

The quarter's rent due at Christmas, and not included in this summary, may be taken, then, as measuring (and it rather exceeds) the amount by which our balance to-day is smaller than that at the last Anniversary.

The interest of our Meetings has been well sustained, and the attendance as large as ever; the demand for our publications seems to be increasing; our Library grows more and more useful, is more and more used. The alterations in the Bye-Laws which you have to-day adopted will provide a less cumbrous machinery for effecting some of our principal objects, and rendering more prompt the action of the Executive.

In fine, our term of office has not been a period of inactivity. Taking a calm review of the past, the Council feels itself justified in asserting that, if not remarkable for decided progress, the year 1863 at all events has not witnessed any retrogression.

25*th January*, 1864.

THE PRESIDENT'S ADDRESS.

GENTLEMEN,

I remember being present at an Anniversary Meeting of this Society when the President delivered an excellent Address, and at the same time told us what an Address should comprise, and in what manner each subject should be treated; he added that unless this was accomplished the custom of addressing you were more honoured in the breach than in the observance. Now, gentlemen, I don't like even to attempt an Address in fetters; I know I should fail: but as I have on all occasions received your most cordial support, and as you have so kindly overlooked all my shortcomings, I am encouraged to ask at your hands permission to pursue my own unguided way, just noticing such things as in my humble judgment appear most important or interesting; and I trust that in any observations I may make you will give me credit for being prompted by one feeling alone—a sincere wish for the welfare of the Society in every respect, and a desire that it may be the means of increasing the real benefits of Entomology a hundred fold.

It has been customary, on previous Anniversary Meetings, for the President to bring before you a statement of our finances, of the number of Members added to our ranks during the previous year, and a few other items connected with the management of the Society. On the present occasion the Report of the Council supplies these details, and relieves me of that portion of my task.

During the past year the Society came to a decision, which in my opinion was a wise one, to sell the remaining portion of our collection of insects; this has been carried into effect, and the proceeds wisely used; partly in the purchase of books, as well as a book-case; and partly in reproducing those numbers of our 'Transactions' which form the Second Series: we are now in a position to supply Members or the public with the Second Series complete; I trust at our next Anniversary the same will be the case with the First Series.

Having parted with our collections, it behoves us to carry out to the utmost the object proposed by the sale of our insects; our aim

should be to increase our already excellent Library, by the purchase of such works as we still require, so far as our means will enable us. Numerous valuable works have been purchased during the year, but many, which may be considered indispensable working books, are still wanting.

But possessing, as I have already observed, an excellent Library, are we taking every possible care of it? In my opinion we are not. When I look at the rows of volumes,—many of them well, even handsomely, bound,—and know that they stand there, month after month, exposed to the constant accumulation of London smut, the dirtiest of all dirt, I feel that we are not taking that care of our books that I think we could and ought to do. I think all our books should be protected by glazed doors, and this might be accomplished by a reasonable, and not a large, outlay; we don't require carving and gilding, rich mouldings, or varnished rosewood, but we want, in my opinion, either our shelves fitted with proper doors, or a set of new, but plain cases made, in order that our treasures may not be deteriorated in value through neglect. When these requirements are obtained, and the shelves properly lettered or numbered, our Librarian can so arrange and catalogue the books that at a moment's notice he can lay his hand upon any volume that may be required; this I apprehend is not the case now.

Meetings of the Society.

It is a circumstance upon which we may congratulate ourselves that our Monthly Meetings are so numerously attended; in this respect our Society forms a marked contrast to many others; during the last year the attendance has quite equalled, if not exceeded, that at any previous time. A reference to our 'Proceedings' will show that many valuable short papers have been read that do not appear in our 'Transactions;' and many valuable suggestions upon economic Entomology will be found therein. The numerous exhibitions of rare species are in themselves of great importance, since they furnish valuable data as to first discoveries of species, or, in many cases, of rediscoveries of species perhaps hitherto deemed foreign interpolations in to our Fauna. I cannot omit this opportunity of expressing an opinion as to the 'Journal of Proceedings,' and I think I am not the only one who holds it; I believe that at no previous period of the existence of this Society were the 'Proceedings' reported in so efficient and comprehensive a form.

The Collections of the late Mr. Curtis.

At the November Meeting of this Society, Prof. Westwood expressed his regret that the collections of the late Mr. Curtis had gone out of this country; I join with him so far as Entomology is concerned, but when viewed as a source from which some provision might be realized for his family it is a circumstance for congratulation, since thrice the sum has been obtained in Australia that could probably have been expected in this country. I have thought it well that some notice of the contents of the Curtisian collections should be laid before you; it is desirable, at different periods, to be able to ascertain what a good collection really consisted of, and, having the material in hand, I have used it for that purpose. I should observe that the Curtisian collection contained only short series of examples of each species; probably if we take four as an average number we shall arrive at a pretty correct estimate of the number of species it contained, for I have only a memorandum of the number of specimens, and I only give those of the British insects. The number of specimens of Coleoptera was 3175, or about 793 species; of Lepidoptera, 2400 specimens, about 600 species; of Hymenoptera, 2571, about 642 species; of Diptera, 1959, about 489 species; of Neuroptera, 388 specimens; of Hemiptera, 558; and of Homoptera 81 specimens.

The Collections of the British Museum.

The national Entomological collections have, at various periods, been greatly enriched by munificent presentations. Walter Elliott, Esq., presented a very fine collection of Indian species of different Orders, their number in all being about 3000. General Hardwick also presented a very extensive collection, consisting of insects of all Orders amounting in number to about 2000 specimens. The Rev. D. Morgan presented the whole of his African collection, made during a residence of some years at Sierra Leone, about 1800 specimens, illustrating species of all Orders; the latter was an exceedingly fine series of species, a very large number being at that time new to Science. I must also mention the fine collection of American insects presented by the late Mr. Edward Doubleday, in all amounting to 1250 specimens.

It becomes my province this year to record the munificent gift of Coleopterous insects by John Bowring, Esq. This collection, in eastern species, probably surpasses in richness any hitherto formed;

it not only contains the accumulation of years made by Mr. Bowring himself in China, but also large accessions made to it by purchase; fine series of the treasures collected by Mr. Wallace, during his seven years' labours in the Eastern Archipelago; full series of the species accumulated by Mr. Fortune in North China; a splendid collection of Coleoptera from Java, and an extensive series of species from India, collected by Mr. Brettingham. One of the most valuable and interesting portions of this presentation is undoubtedly the complete private collection of Longicorns purchased of M. Chevrolat: this collection consists of 10,500 specimens, representing 4500 species. In this gift is also included the well-known collection of Geodephaga made by Mr. Tatum, consisting of 5263 specimens. The unrivalled collection of Curculionidæ formerly belonging to M. Jekel also constitutes a part of the Bowringian donation: these, and others too numerous to be mentioned here, obtained by purchase, certainly altogether constitute the most noble and liberal gift of insects to the national collection ever made; and I should be negligent indeed if I did not state that this munificent donation was made by Mr. Bowring unfettered by any conditions.

A fitting record of such a noble gift I feel you will all think desirable; this I cannot pretend to offer you; such a memorial must be worked out by a competent Coleopterist: I must content myself with stating that the Bowringian collection contains 84,240 specimens, arranged in three cabinets of forty drawers each, and fourteen cabinets of twenty drawers each.

Every Entomologist must, I am sure, rejoice in the knowledge that such a fine collection has become the property of the nation, and that it is now so freely open for consultation to every Coleopterist.

The proper arrangement of such an enormous addition to the already matchless collection of the Museum is indeed "a consummation devoutly to be wished," and such a Herculean task would no doubt be greatly expedited by the aid of Entomologists specially competent to undertake different portions. You are well aware that the present staff of officers in the Entomological department of the Museum must necessarily be years at work before any approach to an arrangement can be looked for. A feeling such as I have indicated has already shown itself in various ways, but never, in my opinion, in a way likely to attain so desirable an end. I have read several articles published in our periodicals touching upon this subject, but also, I am sorry to say, containing reflections upon the Museum authorities,

which could only arise from a complete ignorance of facts. I am perfectly aware of the readiness with which the Trustees have at all times employed extraneous aid in the various departments. As regards the Entomological portion of the collections, I am ignorant of a single instance in which the Trustees have not most readily consented to any proposal offered to their consideration as being likely to render any portion of the collection more efficient for its purposes.

The bar to what has been urged as being so highly desirable, in appointing assistants to the Entomological department, lies in another direction. Scientific departments require experienced Entomologists, and cannot at once work well, to which no candidate over twenty-five years of age can be admitted.

It is an extremely easy task to show that scientific departments require totally different regulations, but until this is duly impressed upon those who have the control of such affairs it is quite hopeless to expect the attainment of the end that every Entomologist must so earnestly desire.

I must now call your attention to other important and valuable presentations made to the national collections. The Council of the Linnean Society have placed the valuable Banksian collection in the British Museum: this liberal gift I am sure you will all duly appreciate, and the opportunity of consulting it will be embraced by many Entomologists. In order to facilitate the consultation of the Fabrician types, Dr. Gray has separated these from the mass, which will prove a great saving of time to the student. The Banksian collection contains 1598 specimens of Coleoptera, 893 of Lepidoptera, 280 of Hymenoptera, 100 of Orthoptera, 199 of Homoptera, 225 of Diptera, 47 of Neuroptera, and 90 of Hemiptera,—altogether 3432 specimens. In addition to the above, the Linnean Society also presented the entire series of insects collected by Captain King, described by Messrs. Curtis and Haliday in the 'Transactions' of that Society.

The presentations made to the national collection by the Entomological Society have been highly valuable, in an Entomologist's estimate perhaps the most important. The types of the species of British bees described by the Rev. W. Kirby have found, I trust, a permament abiding-place in the Museum: it is much to be regretted that they were for so many years neglected by the illustrious monographer as being of little value; but so long as the fragment of a specimen hangs upon a pin it will be prized as a memento of a noble monograph,

that marked one of the most important epochs in the annals of Entomology.

In addition to the above, the types of Kirby's 'Century of Insects,' and also a large series of types of Haworth's 'Lepidoptera Britannica,' have been presented by this Society.

Numerous as are the presentations already mentioned, I have to include in my report 2171 foreign insects, many of which are new to Science; amongst them are species presented by Earl Russell from the Zambezi; others by Captain Speke from central Africa; by Dr. Livingstone and Dr. Kirk.* Amongst the other donors the names of Sir John Hearsey, Mr. Haliday, Mr. Moore and Mr. Walker will be found.

The number of British insects presented is very small, and such must now be expected to be the case. The collections of British insects have been greatly increased by purchases during the last ten years, so that every additional species now presented is sure to be one of some rarity; seventy-five have been added during the past year through the liberality of Messrs. Waterhouse, Sharp, E. A. Smith, J. C. Dale, and the Revs. W. Tylden and Mathews. The gross number of insects presented during the last year to the national collection is 86,486 specimens.

Entomological Publications of 1863.

The Transactions of the Society.

The 'Transactions' of our Society constitute the Entomological thermometer whereby the state of the Science in this country will be measured throughout Europe. We have published four Parts during the past year, and I submit that they may fearlessly challenge the ordeal I have alluded to; the papers generally are characterized by great care and research, the new species described being constantly compared with their nearest allies, and at the same time their specific differences pointed out. I particularly wish to impress this fact upon the attention of members, and to express a hope that none of us will in future neglect so important and necessary an appendage to every description, when it is possible to give it. The magnitude into which all families of insects are now expanding renders it a paramount

* Amongst the insects presented by Dr. Kirk is a fine new species of Goliathus; this has been described by Mr. George Gray, and named Goliathus Kirkianus; a figure will accompany the description when published in the 'Transactions' of the Zoological Society.

duty on the part of every describer to facilitate, in every possible way, the discrimination of his species.

The Parts published are the fifth, sixth, seventh and eighth of the first volume of the Third Series of our 'Transactions.' Part 5 contains a paper by the Rev. Hamlet Clark on Haliplidæ and Hydroporidæ, all being eastern Asiatic species, and many of great rarity. Professor Westwood has contributed the next paper; it is a description of Lucanidæ, and is amply illustrated by figures and dissections: the observations and references appended to the species may serve as a model to us all of the way in which descriptive papers should be elucidated. It would be difficult to over-estimate the value of the paper entitled "A few Remarks on Mr. James Thomson's Catalogue of the Lucanidæ," by Major Parry. It is well known to many of us that the Lucanidæ have been the particular object of the author's study for several years past; possessing a splendid collection himself, and being well acquainted with the principal collections of Europe, every remark of his is of the highest authority. The author's opinion of Mr. Thomson's 'Catalogue' we find to be that "the want of references, as to description and synonymy of the various species, renders it almost useless:" this is another proof of the necessity of what I have endeavoured to enforce. The amount of information contained in this paper is quite a boon to Science.

The sixth Part contains descriptions of some splendid species of the genus Catascopus by Mr. Saunders, illustrated by two Plates: it is to be regretted that figures of such beautiful insects should not be coloured. The other papers contained in this Part are by Mr. Waterhouse, Mr. Kirby, Mr. McLachlan, Mr. Hewitson and Mr. Trimen,—all testifying to the truth of my general remark on the labours of the year.

Part 7 contains a very elaborate paper by Mr. Pascoe on Australian Coleoptera: the descriptions are accompanied by a number of useful observations, and, when possible, the prominent distinctive differences from allied species are pointed out: two excellent Plates illustrate this paper. Dr. Stal's descriptions of exotic Hemiptera complete this, and form the commencement of the following Part: this latter also contains papers by Mr. Stainton, Mr. Baly and Prof. Westwood.

The Entomologist's Annual.

The 'Entomologist's Annual' for 1864 contains, in my opinion, a good half-crown's worth of information. "A Journey to Finmark," by Dr. Wocke and Dr. Staudinger is full of interesting matter: the Order Lepidoptera was that to which their attention was particularly devoted. The Diptera, however, appear to have forced themselves upon their notice: gnats, we learn, positively interfered with the collecting of Lepidoptera: this we can very well believe; and had Dr. Staudinger fallen in with them in similar numbers to the Englishman who wrote his name in a swarm with his stick, the name remaining visible for some seconds, in such a case we imagine that Diptera alone would have been attended to by the learned Lepidopterist. Hymenoptera, we learn, are plentiful in Finmark, and the Phryganidæ rich in species.

My own "Notes on Hymenoptera" occupy nine pages, but I fear they contain only one or two bits of information that will be considered worth recording; one, remarking upon the almost total disappearance of certain families of aculeate Hymenoptera; another, on the capture of the male of a species of ant, that sex not being previously known; and the discovery of a new locality for the rare Didineis lunicornis. I am happy in being able to give you the opinion of an esteemed friend on the paper itself—it would perhaps have been an excellent title—"A Dirge on Hymenoptera."

Mr. Rye's paper on Coleoptera is a valuable record of the discoveries of species new to our Fauna, and of errors in nomenclature: four new species are very carefully described. Entomologists are greatly indebted to Mr. Rye for his excellent *resumé* of the labours of the past year.

Dr. Knaggs has contributed a valuable paper on new and rare species of Lepidoptera. A table is given, which appears to me to be very excellent, since it gives, in a most concise manner, just the information we all desire to obtain relative to local or rare species.

"Notes on British Trichoptera," by Mr. McLachlan, is a paper full of valuable information, particularly that portion which treats of the interesting habits of this family. I can fully appreciate the regret expressed by the author that so few Entomologists pay any attention to the Phryganidæ; were it otherwise, many interesting discoveries would no doubt be made. Let us hail then, with marked approbation, the announcement of the intention of the author to commence at once a Manual of the British Phryganidæ; and let us hope

that the production of this work will prove the means of bringing into the same field a number of labourers as energetic and accomplished as the author of the promised Manual.

The concluding paper, entitled "Observations on Tineina," is by the Editor, Mr. Stainton, whose name is a guarantee for its excellence.

The Journal of Entomology.

Parts 7, 8 and 9, being the commencement of Vol. ii, have appeared during the past season: the high character of the Journal is fully upheld by the papers of Mr. Wallace, Mr. Pascoe, Mr. Baly, Mr. Wollaston, Mr. McLachlan, Prof. Westwood, the Rev. Hamlet Clark and Dr. Schaum. I would particularly call the attention of the younger members to some exceedingly valuable advice by Prof. Westwood, forming an Introduction to a "Description of a new Species of Longicorn Beetle:" his words are those of matured experience; had the author himself had the advantage of such experience to guide him in his early Entomological years, he would not have fallen into the error which he now so properly condemns; I am sure he would be the first to admit this; therefore his advice comes with double authority.

Journal of Proceedings of the Linnean Society.

In the 'Journal of Proceedings of the Linnean Society,' published in 1863, are two papers by myself; the first contains descriptions of new species of Hymenoptera collected by Mr. Wallace in the islands of Mysol, Ceram, Waigiou and Bouru; the second is entitled "Notes on the Geographical Distribution of the Aculeate Hymenoptera collected by Mr. Wallace in the Eastern Archipelago." Mr. Walker has contributed three papers to the same Journal: these form part of a Catalogue of Heterocerous Lepidopterous Insects collected by Mr. Wallace at Sarawak, in Borneo: seventy-nine new species are described, and eleven new genera established.

Illustrations of Exotic Entomology.

Three Parts of Mr. Hewitson's 'Illustrations of Exotic Lepidoptera' have been published during the past season; forty-two new species are figured, and five figures are also given of species previously described by other authors. This is certainly one of the most beautiful works on Lepidoptera that has appeared in this country: some of the species figured are amongst the most lovely of the tribe to which

they belong. The subscribers to this work should be numbered by hundreds instead of tens. I trust the time is approaching when works like this will yield a profit, instead of entailing a loss on their projectors.

The only Entomological Catalogues published by the Trustees of the British Museum during the past year are two of Lepidoptera Heterocera by Mr. Walker.

The Zoologist.

The 'Zoologist' for 1863 contains a large amount of Entomological information, and some valuable descriptive papers; amongst the latter a translation of "Some Remarks on the Species of the Genus Nepticula," by H. von Heinemann; twenty-eight species are described, and I notice under each a description of the larva and mention of the food-plant: these furnish satisfactory assurance of the paper being written by an Entomologist thoroughly in earnest, and a master of his subject, — one who indeed has studied a book in which no errors are to be found. The above paper is immediately followed by one descriptive of sixteen species of Lithosia, by M. Guenée, worked out in the same admirable manner: such papers cannot fail to be duly estimated by all Entomologists.

Hymenopterists are much indebted to Mr. May for his valuable translations from the Dutch of M. Snellen van Vollenhoven's papers "Life-History of Sawflies:" the histories given are those of Emphytus tibialis, Nematus viminalis, Allantus Scrophulariæ, and Cimbex Amerinæ: the larva is described as well as the perfect insect; in fact each paper is in truth what it purports to be—the life-history of a sawfly.

Amongst the captures of rarities, we have another instance to add to those previously recorded of the occurrence of the beautiful Calosoma sycophanta; it was found, recently killed, at the foot of a hill, one of the Dartmoor range: the captor, Mr. Reading, of Plymouth, observes: — "Some Coleopterists do not consider this a British species, an opinion I concurred in until I met with it." I am inclined to think that many of the species placed by Mr. Crotch in the list of "reputed British species," in his 'Catalogue,' recently published, would be advanced to the British ranks, if discovered under similar circumstances by that author. Among the "reputed" species I notice Anomala Donovani: if this is not a British species, of what country is it a native? On many minor points Coleopterists will hold different

opinions; some, like myself, will think the removal of the Staphylinidæ to the end of his arrangement is not an improvement; for I cannot but think there is a close affinity between this family and the Silphidæ; but I have paid too little attention to, or rather I should say I have not at any time sufficiently studied, the Order to render any opinion of my own of much value. Were I to express an opinion as to what is a species, and what is a variety, I should differ from Mr. Crotch as regards the species of his first genus. I certainly consider Cicindela maritima a distinct species from Cicindela hybrida; and on the first page I could point out two or three other similar cases; but, as I have previously remarked, these are minor considerations,—mere matters of opinion.

On one point I think all Coleopterists will agree, that we are much indebted to Mr. Crotch for giving us the result of his studies. A Coleopterist who has worked with both head and hands, like Mr. Crotch, who has made himself acquainted with the contents of the principal cabinets of Europe, and who has proved his capabilities for the task he undertook, could not fail to produce a work that should do honour both to himself and to the Science he cultivates.

Many short notices of specific differences will be found in the 'Zoologist' for the past year, and I select one as an example of the facility with which we are enabled to distinguish species very closely resembling each other. In some notes on Philonthus temporalis Mr. Rye gives three outlines which at once enable us to separate Philonthus temporalis, P. punctiventris and P. æneus,—species strongly resembling each other. I mention this as an example most worthy of being followed: a few strokes of the pencil will frequently effect more than half a page of description; and any method that will facilitate the discrimination of species with ease and facility, is a boon to Entomologists.

The present volume contains five contributions from Mr. Arthur Adams. I would warn Entomologists not to allow themselves to be misled by this author: he frequently gives the most delusive titles to his papers. The first he calls "Rambles in search of Land Shells:" those who have little or no interest in land shells would be apt at once to turn on to the next article; but I have found Mr. Adams on these rambles so alive to everything that surrounds his path, that I never allow myself to trust to his titles. If you accompany Mr. Adams in search of his land shells, you soon discover huge cockroaches gathering their young around them as a hen gathers her chickens; Opatrums are found on barren spots, and blue, brown, and

yellow butterflies: he tells you the various species of plants that each frequents, and amongst these he says are legions of long-shanked grasshoppers: this ramble was at Rio. At the same place is a light-house, on a small islet, furnished with a revolving light, and, attracted by the brilliancy of the polished reflectors, thousands of winged insects come tapping against the glass all night long. Cicindelidæ are captured, Hemiptera of extravagant shapes are seen reposing on the green leaves, giant spiders, Juli, centipedes and Polydesmi are found amongst magnificent aloes with flowering stems from twenty to thirty feet high. A little further on, under dead leaves, a fine Carabus was found, and, on emerging from a sunken path into the merry sunshine, species of Apoderus, Hispa and Cassida were seen alighting on the sun-lit leaves. Mr. Adams is a sort of entomological pre-Raphaelite, every object in the landscape is given with such faithful minuteness. When in China, he landed on Dane's Island, in the Pearl River: the account he gives of the habits of ants is very interesting; one species builds a large nest by bending down, and attaching together the leaves of trees; this is effected by piercing the edge of the leaves with their large sharp jaws, a viscid liquor exudes, which immediately hardens and cements the leaves together. Another species excavates cylindrical holes in the ground; these are entered by an elevated tubular shaft, formed of agglutinated grains of sand, probably exactly similar to the entrance-tube constructed by a British species of wasp —Odynerus spinipes. A third species of ant jumps about the pathways like the jumping spider (*Saltica*); this ant has long jaws, like a pair of forceps turned up at the end; it is the Drepanognathus venator of my 'Catalogue.'

In all branches of Natural History there are certain species indelibly connected with some cherished history of childhood,—some that no doubt have been so united for centuries past: these we care not to separate, even though stubborn facts would ruthlessly dispel our long-dreamt dream; thus the robin covered the Children in the Wood "painfully with leaves;" the wolf glared on Little Red Riding Hood; and amongst insects, does not the glow-worm trim her lover's lamp, and does not the lantern fly, like a wandering star, flit before us in the forests of South America? Any matter-of-fact person who ventures to explode any of our popular beliefs meets with a cold reception; therefore, on looking over the July number of the 'Zoologist,' and meeting with an article headed "The Lanthorn of Fulgora Laternaria," in which Mr. Robert John Treffry, of New Granada, says, "I cannot tell why it is called the 'lanthorn fly,' for it gives no light,"

in being able to answer his question by replying, "Because other people have been *more fortunate* than yourself, and have seen its beautiful luminosity." Had I possessed no further knowledge of the subject than Mr. Treffry, what had I thought of the following? — "The so-called lanthorn appears to answer as a drum to reverberate its hum, and as a 'buffer' to protect it, when in its rapid flight it strikes against an obstacle, as it is elastic and horny. . . . . I think its use is what I have stated—an instrument of sound and a 'buffer.'" I am expected to believe that the lamp of the winged torch-bearer is no more than this. No! do not believe in any such degrading fact. I will bring evidence before you of such weight as to settle the question of the luminosity of the lantern fly, and restore it to its legitimate position in your minds as a light-bearing insect.

At a Meeting of the Royal Physical Society of Edinburgh, held November 24th, 1858, a specimen of the lantern fly (*Fulgora Laternaria*) was exhibited by Dr. J. A. Smith, who observed that it was still an undecided question amongst naturalists whether these flies were really at any time luminous or not. It was therefore of importance that the undoubted evidence of eye-witnesses should be produced. Mr. Banks, of Prestonpans, who forwarded the Fulgora to Dr. Smith, was therefore at once requested to obtain further information from his correspondents on that particular point.

On the 27th of April, 1859, at a subsequent Meeting of the same Society, Mr. James Banks communicated, through Dr. Smith, the reply of his correspondent at Honduras to the question raised at the Society. Mr. Banks had received various letters upon the subject of the luminosity of Fulgora Laternaria: they all bore testimony to the truth of the statement of this fly really emitting a light. One from Mr. Alexander Henderson, of Belize, furnished the following details:—"In answer to the question, 'Is it really luminous?' certainly the fly possesses light, and therefore emits it. The light is evidently under control, for it increases and diminishes at pleasure. When the wings are closed there are three luminous spots on each side of the head-part, on the upper part (like a cat's staring eyes) of a beautiful sulphur-coloured light, in rays that spread over the room. The third luminous spot is seen when the fly is on its back, half-way down the abdominal part of the insect. When quiescent the lumination is least; in daylight the upper spots are nearly white, emitting no light whatever (its lively time is at twilight). Immediately on being agitated, or moving about, the spots become sulphur colour, and radiate forth streams of light, clearly seen, although the sun be shining

into the room, as it now does at the moment I write, with the creature in the glass tumbler before me. We shut out the light, and to test the power of the fly I took up a book and read two verses of the 109th Psalm. Mr. Robert Gregg also took up a book and read by its light. I hope this will satisfy all that the lantern fly is luminous."

In the 'History of the West Indies,' by R. M. Martin, 1837, vol. ii. page 104, being vol. v. of the "British Colonial Library," is a statement fully corroborating the truth of the lantern fly being luminous.

The question must, I think, now be considered as settled; and this, I hope, wipes away the last stain cast upon the fair fame of Madame Merian: romance, as it has hitherto been considered by many, becomes plain reality.

All naturalists of experience have no doubt long ago ascertained the truth of the observation that Nature only reveals herself at intervals, and in some cases only to favoured votaries. The luminosity of Fulgora candelaria, so common a species in China, has never been observed by Mr. John Bowring, or by others with whom I have conversed on the subject; but some years ago I had a box of Chinese insects before me, when, of two sailors who stood by, one exclaimed to the other, pointing to the Fulgora, "See here, Tom, here's one of the flying candles that we used to catch in our hats along shore at night in China." I had not drawn their attention to the insect, or mentioned the circumstance of the insects coming from China. Count Christian Yedlety d'Enzenberg, an officer in the Austrian service, informed me that he had seen them shining with great brilliancy at night, and that the luminosity flashed out at intervals, like a revolving light.

Altogether the volume of the 'Zoologist' for 1863 fully sustains its character as the leading journal for the record of facts and anecdotes relating to all classes of animals.

The Naturalist on the Amazons.

The most important contribution to Entomology in this country, made during the past season, is doubtless to be found in the pages of 'The Naturalist on the River Amazons:' he who has read that book once, will, if he has a true perception of the beautiful in nature, recur to it again and again; he who has not has a great treat to come.

The title of the work well indicates the character of the contents: we feel how truly Mr. Bates remarks at the very commencement, "It was with deep interest that my companion and myself, both now about to see and examine a tropical country, gazed on the land where

I at least eventually spent eleven of the best years of my life." We are almost selfish enough to wish that the author were destined to give us the results of another sojourn in some equally interesting locality; but he has returned, and is among us, and, for more than our own sakes, we cannot and do not really wish to part with him.

But let us accompany the naturalist on his first walk into the forest, and what are the sounds that break upon our ears? "The whirring of the Cicadas, the stridulation of the crickets and grasshoppers, the plaintive hooting of the tree frogs—all blended together in one continuous ringing sound" during the brief twilight; these are, in the words of the naturalist, "the audible expression of the teeming profusion of nature." Entomology, it is true, is only one of the charms of the book, but it is on that portion that I purpose to make a few remarks, and from which I shall make a few extracts.

The majority of Entomologists I imagine, have always, like myself, regarded Brazil as the country in which insects attain the largest size and greatest beauty; we have thought so because we considered that its physical conditions were adapted for their production, and that it was, in the words of Mr. Bates, "a glorious country, and the climate one of the most enjoyable on the face of the earth," and, being such, we believed its climatal conditions to be the cause.

Mr. Bates thinks this notion an incorrect one, and he invites us to compare members of those genera that are common to Northern Europe and Equinoctial America, and to ascertain which climate produces the largest and most beautifully coloured species; by so doing we should see the supposed effects of climate on nearly-allied congeners, that is, creatures very similarly organised. The genus Cicindela is quoted as an instance; the genus is common to both regions, and about the same number of species are found in each; but the Amazonian species are much smaller in size and more obscure in colour, none being equal to the European Cicindela campestris. Again, of eight genera of butterflies, only three are represented by handsomer species in Amazonia than in Northern Europe. These positions are no doubt perfectly true, and no doubt there is a very large number of dull-coloured species in tropical countries; but I do not find my dreams entirely dispelled: I see the Megacephalæ of dazzling brilliancy; I see fossorial Hymenoptera of unrivalled size and beauty; and then I call to mind the host of glorious butterflies that live alone in such paradisean regions as the forests and banks of the Amazons.

Mr. Bates soon introduces us to the Formicidæ, for ants we are told were everywhere; ants an inch and a quarter in length, marching in

single file, which might well create amazement. The naturalist soon settles down to the investigation of the habits of some of the more interesting species, and we have a history of the Saüba ant (*Œcodoma cephalotes*) given with a minuteness of detail, and at the same time in such graphic language as the naturalist alone can pen, who, with untiring zeal, patience and perseverance, has watched for those moments when Nature deigns to uplift the veil to her votaries.

The Saüba ant is a great scourge to the Brazilians, in some districts we are told rendering agriculture almost impossible: this ant defoliates trees, and sometimes does great injury to orange and coffee plantations. Mr. Bates appears to have been the first to make known the use to which the leaves are applied; after much time spent in the investigation he discovered that they were used to thatch the domes which cover the entrances to their subterranean dwelling: these domes, or outworks, are sometimes forty yards in circumference, but not more than two in height; they are composed of agglomerated sand, having numerous entrances all leading to the main gallery or mine; the tunnels are occasionally very extensive, running under rivers as wide as the Thames at London Bridge. The Saüba, at times, enters dwellings and stores, committing serious depredation; were it not that at the time of the swarming of these ants they are preyed upon by animals and insectivorous birds, they would soon become a devastating scourge.

Let us now accompany the naturalist into the forest, to a part of which we are told that "description can convey no adequate idea:" we are desired to imagine "a vegetation, like that of the great Palm House at Kew, spread over a large tract of swampy ground, but mingled with large exogenous trees, similar to our oaks, covered with creepers and parasites; the ground encumbered with rotting trunks, branches and leaves; the whole illumined by a glowing vertical sun, and reeking with moisture." Can any Entomologist picture to himself a more glorious locality? Yet even this, we are told, fails to do it justice. What does the naturalist find in such a locality as this? First, the splendid Morpho Achilles, a large glossy blue-and-black butterfly, six inches in the expanse of its wings; then comes Papilio Sesostris, clad in velvet-black, relieved by a large silken green patch on its wings; and in his train follow the lovely P. Æneas, P. Vertumnus and P. Lysander: no one will dispute the truth of the remark, "Such places are paradises to a naturalist." All this beauty is to be sought for in the shade of the swampy forest, and we are tempted to ask, Why is it

hidden there? Hear the observation of the naturalist:—"I think it a childish notion that the beauty of birds, insects and other creatures is given to please the human eye; surely such rich plumage and song, like the other endowments of species, are given them for their own pleasure and advantage." This, if true, ought to enlarge our ideas of the inner life and mutual relations of our humble fellow creatures.

In the neighbourhood of Para, Mr. Bates found 700 species of butterflies, many of the most showy kinds being seen flying about the streets and gardens; but the more splendid metallic-blue Morphos are confined to the shade of the forest; Morpho Rhetenor, whose wings are of a dazzling lustre, is an almost unattainable prize on account of its lofty flight, rarely descending within twenty feet of the ground; when sailing along, and occasionally flapping its wings, the blue surface flashes in the sunlight with a brilliancy distinctly visible a quarter of a mile off. One species, Hetaira Esmeralda, having clear wings, with a single opaque spot of a violet and rosy hue, flies over dead leaves in gloomy shades, and resembles, says the naturalist, "the wandering petal of a flower."

Insects of other Orders—dragonflies for instance—are almost equally conspicuous with the butterflies; about 100 species occur near Para; some frequent open sunny places; others live in the darkest shades of the forest, the latter being the most beautiful. Chalcopteryx rutilans is pre-eminently beautiful; its anterior wings are quite clear and transparent, whilst the hind pair are of a dark colour, glittering with a violet and golden refulgence; but beautiful as many of these insects are, they are pronounced to be the pest of the Lepidopterist, since they wage unceasing war with all day-flying insects.

Many of the Arachnida would doubtless be pronounced hideous monsters by the majority of persons; but their history is deeply interesting, and their usefulness in the economy of nature commands the admiration of the naturalist. In the Amazonian forest is found that monstrous spider, Mygale Blondii, five inches in expanse; and others extend to full half a foot. Some species live, we are told, under the tiles or thatch of houses, constructing dens of a closely-woven web, resembling fine muslin; sometimes they are seen crawling on the walls of apartments; others build similar retreats in trees, and attack birds; whilst some excavate tunnels two feet deep, lining them beautifully with silk: such species are said to be nocturnal. Mr. Bates has recorded his observation of Mygale avicularia preying upon

a species of finch; thus confirming the record of Madame Merian, which had long been considered by many a traveller's romance.

Every collection of insects becomes of tenfold interest when we are made acquainted with the natural history of the species; all therefore who possessed a series from the collections of Mr. Bates, found, like myself, an additional value given to their treasures when they met with the history of their economy detailed in the pages of the 'Naturalist.' The Coleopterist found that the genera Coptodera, Goniotropis, Morio, &c., are found under the bark of trees, and that Calleida, are arboreal insects, running over logs, branches and leaves. Of the Histeridæ we learn that one group is found in the moist interior of palm-stems; another, a very flat kind,—Hololeptæ,—lives under the bark of trees; a third group, cylindrical in shape, drills holes into solid wood; they look like tiny animated gimlets at work, their pointed heads being fixed in the wood, whilst their smooth glossy bodies work rapidly round, and drive little streams of saw-dust from the holes: does not this description give an additional interest to the carpenters of the genus Trypaneus?

As might be expected from so accurate an observer, we find a vast amount of most interesting information relative to the habits of the Hymenoptera; but I must not trespass too much upon your time, and, tempting as the subject undoubtedly is, I shall content myself with one or two extracts. The proceedings of a species of Bembex is most graphically described; this is a solitary species of sand-wasp, as large as a hornet; they burrow in the sand with wonderful rapidity, throwing out beneath their bodies a continuous stream: when the tunnel is completed they seek out a particular species of fly, called Motüca, a bloodthirsty insect, and by so doing they become good friends to travellers. An immense amount of information relative to the histories of wasps and bees is scattered throughout the pages of the 'Naturalist;' particulars respecting the different modes of constructing their nests, and of the materials used by the various species; their parasites are also noticed: at one locality, Villa Nova, not less than 140 species were captured.

I am sorely tempted to quote a portion of a most interesting chapter on the white ants, but to most of you it would be a twice-told tale; I shall content myself by earnestly advising every one who has not read that chapter to lose no time in doing so. Of ants proper, members of the family of true Formicidæ, many highly interesting particulars are recorded. Ants are said to be everywhere and at all times,

upon everything, in everything, and not unfrequently a positive torment in more ways than one. A species of Myrmica,—M. sævissima,—called by the natives the "fire-ant," is said to be the scourge of the river Tapajos, proving quite as cruel a torment as sand-flies or mosquitoes; it is found on all sandy soils in open places; it is a small, shining, red species; its sting is so painful that it is compared to the puncture of a red-hot needle; and so great is its annoyance in houses, where it becomes numerous, that the inmates are compelled to quit them; sometimes whole villages are deserted in consequence; clothing they destroy for the sake of the starch, and every article of food is devoured by them in houses where they take up their abode; Mr. Bates even thought that out of sheer malice they attacked him; for, when at a distance from their nests, the moment one of these ants touched his flesh it stung him violently. In-doors he was obliged to sit on chairs the legs of which were smeared with a kind of balsam very obnoxious to them, and on retiring to his hammock the cords that suspended it were anointed with the same balsam. Were it not that at the end of the rainy season large swarms of them perish by being blown by squalls into the river, many places would be impenetrable through the presence of this little member of the Formicidæ.

Ega is mentioned as one of the richest of insect localities; there Mr. Bates captured 7000 species; about 140 of these were bees, respecting whose history and economy ample details are given; in fact one of the striking peculiarities of this work is, that scarcely a species is alluded to without some trait of its history accompanying its name, showing how carefully every observation was registered. At Ega 550 species of butterflies occurred, of which we are told that "no description can convey an adequate notion of their beauty, and diversity in form and colour."

Ants, as I have before remarked, come in for a due share of attention, and I would particularly call your attention to the fifth chapter of the second volume, where will be found a most wonderful history of some species of the genus Eciton, a set of foraging ants, with stirring accounts of the marches of their vast armies, and of their predatory attacks on communities of their more peaceful brethren. On one occasion an army of Eciton legionis was observed excavating mines in an inclined bank of light earth, whence, from a depth of eight or ten inches, they were dragging the bodies of a bulky species of Formica; some were assisting their comrades to drag out the ants, whilst others were engaged in tearing their bodies in pieces, one ant being

too great a load for a single Eciton; the triumphant march of the army back to their own dwelling follows. The lives of these warrior ants are not all spent either in marauding expeditions, or in the labours of their formicarium; they were frequently observed in some sunny nook of the forest, leisurely strolling about, apparently finding much enjoyment in doing the lazy; some individuals reciprocally brushing and cleaning each other's antennæ; another lazy fellow, stretched at full length, pushing forth first one leg and then another towards a companion engaged in washing those members, by passing them between his jaws and tongue, finishing his friendly offices by a gentle wipe of his antennæ.

Well may the naturalist observe, "It was a curious spectacle, and one well calculated to increase one's amazement at the similarity between the instinctive actions of ants and the acts of rational beings, a similarity which must have been brought about by two different processes of development of the primary qualities of Mind: the actions of these ants looked like simple indulgence in idle amusement."

I must refrain from further extracts. I have shown you that the beauties of the insect world are pourtrayed by the hand of a master, and how much the true science of Entomology teems in every chapter. I have quoted more than enough to establish the observation with which I started, namely, that this work is the most important contribution to Entomology made during the past year; and I can assure you that on arriving at the conclusion of the last chapter I felt as if, in the language of the author on quitting Brazil, I was taking "a last view of the glorious old forest:" the spell by which I had been bound was suddenly broken. Well, then, on the 2nd of June, 1859, might the naturalist cast a lingering gaze upon the land for which he had so much love, and to explore which he had devoted so many years; well might it prove the saddest hour to him when he passed out of sight of that land, which he has fittingly called the Naturalist's Paradise.

Gentlemen, I have to thank you for your kind attention to the observations I have had the honour of making from this chair; and, as I quit it this evening, I embrace this opportunity of offering you my most sincere acknowledgment of the never-failing kind support which you have on all occasions afforded me. It would be impossible for me to characterize my term of office as one of unalloyed pleasure; it has been far otherwise; it has, however, been my endeavour to cherish on all occasions that good feeling amongst us which is the

surest bond of union, and the best safeguard against disunion in our ranks; in this I trust I have not altogether failed. If I have discharged the duties of my official position in a manner that merits your approbation, it is what I have aimed at, and I am amply repaid.

Abstract of the Treasurer's Accounts for 1863.

RECEIPTS.

	£	s.	d.
By Balance in hand January 1st, 1863	25	8	3
Arrears of Subscriptions	19	19	0
Subscriptions for 1863 (98)	102	18	0
Admission Fees	18	18	0
Composition	15	15	0
Tea Subscriptions	8	11	0
Sale of Transactions at Rooms £13 5 10			
„ at Longmans' 39 11 11			
	52	17	9
One Year's Dividend on £109 14*s.* Consols	3	5	10
Sale of Cabinets and Insects at Auction £77 9 6			
„ type-specimens to British Museum 30 0 0			
„ Cabinet to Mr. Janson 20 0 0			
	127	9	6
Donation from W. W. Saunders, Esq., towards printing Index of the Second Series of 'Transactions'	10	0	0
„ from J. W. Dunning, the amount paid by him during the year for postage, stationery, &c.	5	18	5
	£391	0	9

PAYMENTS.

	£	s.	d.
To paid arrears for 1862:—Rent to Christmas £11 5 0			
Yates for Plates 3 13 9			
Partridge, for Book-shelves 4 18 8			
Day, for Plates 0 12 6			
James, for Plates 1 10 0			
Williams & Norgate—Books 3 14 0			
	25	13	11
Insurance to Lady-day, 1864	2	10	0
Curator for attendance	18	4	0
„ for sundry small payments	2	16	2
For Tea, &c., thirteen Meetings	13	13	0
Attendance, Coals, &c.	2	11	9
Postage, Parcels, Stationery, &c.	6	13	11
Christmas-boxes	0	12	6
Printing Transactions, 3rd Ser. Vol. i. Parts 5, 6, 7	54	19	6
„ Proceedings, &c.	13	14	6
Making up back parts of Second Series	17	12	6
Engraving Plates	12	2	6
Colouring Plates	83	0	6
Printing Plates	6	7	9
Books purchased	37	10	6
Binding	10	0	0
Book-case	7	12	0
Collector's Commission	0	10	6
Rent, 3 quarters, to Michaelmas	33	15	0
Balance in Treasurer's hands	41	0	3
	£391	0	9

Liabilities and Assets of the Society.

Liabilities.

	£	s.	d.
Rent to Christmas	11	5	0
Robinson, for Engraving ...	4	14	6
Newman, for Proceedings, &c.	3	9	6
Gas ..... (say)	0	17	6
Roworths', for 'Transactions'	15	0	0
	£35	6	6

Assets.

	£	s.	d.
Arrears of Subscriptions :— good,—(say)	18	18	0
Ditto, doubtful, £29 12*s.* 0*d.*			
Balance in hand	41	0	3
	£59	18	3
Less amount due at Xmas.	35	6	6
True Balance in Cash ...	£24	11	9
And in Consols.....	£109	14	0

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BYE-LAWS

OF THE

ENTOMOLOGICAL SOCIETY

OF LONDON,

AS AMENDED AT A SPECIAL MEETING HELD ON THE 25TH JANUARY, 1864.

CHAP. I. *Object.*

THE ENTOMOLOGICAL SOCIETY OF LONDON is instituted for the improvement and diffusion of Entomological Science.

CHAP. II. *Constitution.*

The Society shall consist of Honorary Members, Corresponding Members, Foreign Members, Ordinary Members, and Annual Subscribers.

CHAP. III. *Management.*

The affairs of the Society shall be conducted by a Council consisting of thirteen Members, to be chosen annually, four of whom shall not be re-eligible for the following year. Five shall be a quorum.

CHAP. IV. *Officers.*

The Officers of the Society shall consist of a President; three Vice-Presidents; a Treasurer; two Secretaries; and a Librarian. The Officers shall be chosen annually. The President, Vice-Presidents, Treasurer and Secretaries shall be elected from amongst the Members of the Council. No Member shall be President, or a Vice-President, more than two years successively.

Chap. V. *Removal or Resignation of Officers.*

1. For any cause which shall appear sufficient to a majority thereof the Council shall have power to suspend any Officer of the Society from the exercise of his Office, or to remove him and declare such Office vacant.

2. In the event of any vacancy occurring in the Council or Officers of the Society, at the next meeting of Council after such vacancy has been made known, the Council shall recommend to the Society the name of some person duly qualified to be elected to the vacant situation; and the next Ordinary Meeting of the Society shall be made a Special Meeting and the Members summoned accordingly, and the Election shall take place as provided for at the Annual Meeting, Chap. XX.

Chap. VI. *President.*

1. The duty of the President shall be to preside at the Meetings of the Society and Council, and regulate all the discussions and proceedings therein, and to execute, or see to the execution of, the Bye-laws and orders of the Society.

2. In case of an equality of Votes, the President shall have a double or casting Vote.

Chap. VII. *Vice-Presidents.*

1. The Vice-Presidents shall be nominated by the President. Such nomination shall be declared at the Ordinary Meeting next after the election of the President in every year.

2. In the absence of the President, a Vice-President shall fill his place, and shall for the time being have all the authority, power and privilege of the President.

3. In the absence of all the Vice-Presidents, a Member of the Council shall preside; and if no Member of the Council shall be present at any Ordinary Meeting, the Members present shall appoint by a majority to be Chairman such Member as they shall think fit; and the Member of Council so presiding, or the Member so appointed, shall for the time being have all the authority, power and privilege of the President.

Chap. VIII. *Treasurer.*

1. It shall be the duty of the Treasurer to demand and receive for the use of the Society all sums of money due or payable to the

Society, and to disburse all sums payable by the Society out of the funds in his hands.

2. No payment exceeding £5, excepting for rent or taxes, shall be made by the Treasurer without the consent of the Council.

3. The Treasurer shall keep a book of Cheque Receipts for admission fees and annual payments; each Receipt shall be signed by himself, the date of payment and name of Member or Subscriber paying being written both on the receipt and on the part of the cheque which is left in the book.

4. The Treasurer shall demand all arrears of annual payment, after such payment shall have been due three months.

5. The accounts of the Treasurer shall be audited annually, previously to the Annual Meeting, by a Committee of three Members of the Council and three Members of the Society, to be appointed by the President at the Ordinary first Meeting in January, of which Committee three shall be a quorum. The Treasurer shall furnish the Auditors with a detailed account of all receipts and disbursements down to the 31st December, previous to each Anniversary.

Chap. IX. *Secretaries.*

1. It shall be the duty of the Secretaries to keep a list of all the Members of and Subscribers to the Society, together with their addresses; to summon Meetings (when necessary) of the Society and the Council; to conduct and produce to the Council all correspondence in any way connected with the Society at the next Meeting after such correspondence shall have been received or taken place; to take Minutes of the Proceedings at Meetings of the Society and the Council; to edit the Transactions and Journal of Proceedings; and generally, to act under the direction of the Council in all matters connected with the welfare of the Society.

2. In the absence from any Meeting of the Society or the Council of both the Secretaries, Minutes of the Proceedings shall be taken by a Member, whom the President shall appoint for the occasion.

Chap. X. *Librarian.*

1. The Librarian shall not necessarily be a Member of or Subscriber to the Society. He shall not be a Member of the Council.

2. The Librarian shall receive such remuneration as the Council shall from time to time determine, and shall be subject to such Rules and Orders as shall from time to time be given to him by the Council.

3. It shall be the duty of the Librarian to take care of the Library and MSS., and keep a Catalogue thereof, with the names of the Donors; to call in all Books borrowed, and see that the Library Regulations are carried into effect; to distribute the Transactions and Journal of Proceedings to the learned Societies, Members and Subscribers entitled thereto, and to take care of the stock of the same, and of the other property on the Society's premises; and generally, when required, to assist the Secretaries in the performance of their duties.

Chap. XI. *Library Regulations.*

1. No Member or Subscriber shall, without special permission of the Council, be allowed to borrow from the Library more than four volumes at one time, or, without leave of the Librarian, to retain any volume longer than one month.

2. If any book be torn, injured, lost, or not forthcoming when demanded by the Librarian, full compensation shall be made for the same by the borrower.

3. The Librarian shall call in all books borrowed from the Library on the 5th day of January and 5th day of July in every year; and in case the same be not returned on or before the Ordinary Meeting of the Society in the following month, notice thereof shall be given by him to the Council, who shall then direct a second notice to be sent to the Member or Subscriber retaining any book, and in case the same be not returned within the further space of four weeks from the date of such second notice so sent, such Member or Subscriber shall in future be disqualified from borrowing books from the Library without the special permission of the Council.

4. All Members of and Subscribers to the Society shall have free access to the Library at the time specified in the Bye-Laws.*

5. No Stranger shall be allowed access to the Library unless introduced by a Member or Subscriber; but a note addressed to

* The Librarian is in attendance at the Rooms of the Society every Monday from Two to Seven o'clock, P.M.

the Librarian or Secretary shall be deemed a sufficient introduction.

Chap. XII. *Election of Members and Subscribers.*

1. Every Candidate for admission into the Society shall be proposed by three or more Members, who must sign a Certificate in recommendation of him. The Certificate shall specify the name and usual place of residence of the Candidate.

2. The Certificate for a Member, having been read at one of the Ordinary Meetings, shall be suspended in the room, read again at the following Ordinary Meeting, and the person therein recommended shall be ballotted for at the next Ordinary Meeting.

3. The Certificate for a Subscriber, having been read at one of the Ordinary Meetings, shall be suspended in the room, and the person therein recommended shall be ballotted for at the next Ordinary meeting.

4. The method of voting for the election of Members and Subscribers shall be by ballot, and two-thirds of the Members ballotting shall elect.

5. The Election of any Ordinary Member shall be void unless the admission fee shall be paid within twelve months after the date of his Election; the Council shall, however, possess a discretionary power to extend the time of payment.

6. Members and Subscribers shall sign the Obligation Book of the Society at the first Ordinary Meeting of the Society at which they are present, and shall then be admitted by the President.

Chap. XIII. *Admission Fee and Annual Contribution.*

1. The Admission Fee for a Member shall be £2 : 2*s.*, the Annual Contribution £1 : 1*s.*

2. The Annual Contribution for a Subscriber shall be £1 : 1*s.*, without Admission Fee.

3. The composition in lieu of the Annual Contribution shall be £15 : 15*s.*; the composition for a Member or Subscriber elected previous to the 1st January, 1852, is £10 : 10*s.*

4. The Annual Contribution shall become due on the 1st day of January in every year in advance; but any Member or Subscriber elected after the 30th of September will not be called upon for his Contribution for the remaining portion of that year.

Chap. XIV. *Withdrawing and Removal of Members and Subscribers.*

1. Every Member or Subscriber, having paid all sums due to the Society, shall be at liberty to withdraw therefrom upon giving notice in writing to the Secretary.

2. Whenever written notice of a motion for removing any Member or Subscriber shall be delivered to the Secretary, signed by the President or Chairman for the time being on the part of the Council or by five or more Members, such notice shall be read from the chair at the two Ordinary Meetings immediately following the delivery thereof, and the next following Ordinary Meeting shall be made a Special Meeting and the Members summoned accordingly, when such motion shall be taken into consideration and decided by ballot; whereat if a majority of the Members ballotting shall vote that such Member or Subscriber be removed, he shall be removed from the Society.

3. Whenever any Ordinary Member of the Society shall be in arrear for three years in the payment of his Annual Contribution, notice thereof in writing shall be given or sent to him by the Treasurer, together with a copy of this section; and in case the same shall still remain unpaid, the Treasurer shall give notice thereof to the Council, who shall cause the name of such member, together with a statement of the sum due by him for arrears, to be read at the three following Ordinary Meetings of the Society, after the last of which a second similar notice shall be sent to him, and at the fourth Ordinary Meeting such Member of the Society shall be removed, and the President shall erase his name from the list of Members.

4. Whenever the Annual Contribution of a Subscriber shall be in arrear one year, such Subscriber shall have his name erased from the list of Subscribers and cease to belong to the Society.

Chap. XV. *Privileges of Members and Subscribers.*

1. The Members have the right to be present, to state their opinions, and to vote at all General Meetings; to propose Candidates for admission into the Society; to introduce Visitors at General Meetings of the Society; to have personal access, and to introduce scientific strangers to the Library; and to purchase the Transactions of the Society at reduced prices.

2. No Member shall introduce more than one Visitor at any one Meeting.

3. Ordinary Members of and Subscribers to the Society resident more than fifteen miles from London, and who shall have paid the Annual Contribution for the year, shall be entitled to receive a copy of the Transactions published during the year without further payment.

4. Ordinary Members shall be eligible to any office in the Society, provided they are not more than one year in arrear in the payment of the Annual Contribution.

5. A Member shall not be entitled to vote on any occasion until he shall have paid his Contribution for the year last past.

6. Subscribers enjoy all the privileges of Members excepting those of voting at the Meetings, holding office in the Society and proposing Candidates. Subscribers have no claim upon or interest in the property of the Society.

Chap. XVI. *Foreign and Corresponding Members.*

1. Any Foreigner, not resident in the United Kingdom, who has distinguished himself as an Entomologist, or who has shown himself able and willing to promote the ends for which the Society is founded, may be elected a Foreign Member; his Annual Contribution shall be £1 : 1*s.*, and he shall be entitled to the same privileges as an Ordinary Member. Foreign Members shall be exempt from the payment of any Admission fee; and shall not be required to sign the Obligation Book until present at an Ordinary Meeting of the Society, and when so present shall be admitted as other Members.

2. Foreigners and others not resident in the United Kingdom may be elected as Corresponding Members, who shall not be subject to the payment of any Admission fee or Annual Contribution, and who shall be entitled to a copy of the Journal of Proceedings of the Society, but not to the Transactions; which, however, may be purchased by them at the reduced price paid by the Ordinary Members. The Membership and Privileges of Corresponding Members shall however cease in case they shall at any future time be continuously resident in the United Kingdom for the space of twelve months, unless sanctioned, in the case of any particular Member, by a special vote of the Council.

Chap. XVII. *Honorary Members.*

1. Every person proposed as an Honorary Member shall be recommended by the Council; and shall be ballotted for, and, if elected, be liable to be removed in the like form and manner,

and be subject to the same rules and restrictions, as an Ordinary Member.

2. Honorary Members shall be exempted from the payment of Fees and Contributions; and shall possess all the privileges of Ordinary Members.

3. No resident in the United Kingdom shall be an Honorary Member.

4. The number of Honorary Members shall not exceed ten.

Chap. XVIII. *Ordinary Meetings of the Society.*

1. The Ordinary Meetings of the Society shall be held on the first Monday in each month in the year, beginning at seven o'clock precisely in the evening, or at such other time as the Council shall from time to time direct.

2. At the Ordinary Meetings the order of business shall be as follows:—

(1.) The names of the Visitors present at the Meeting shall be read aloud by the President.

(2.) The Minutes of the last Meeting shall be read aloud by one of the Secretaries, proposed for confirmation by the Meeting, and signed by the President.

(3.) The Presents made to the Society since the last Meeting shall be announced and exhibited.

(4.) Certificates in favour of Candidates for admission into the Society shall be read, and Candidates shall be ballotted for.

(5.) Members and Subscribers shall sign their names in the Obligation Book, and be admitted.

(6.) Exhibitions of specimens, &c., shall be made.

(7.) Entomological communications shall be announced and read either by the Author or one of the Secretaries.

(8.) When the other business has been completed, the persons present shall be invited by the President to make their observations on the communications which have been read, and on the specimens or drawings which have been exhibited at the Meeting.

3. All Memoirs which shall be read at any Meeting of the Society, shall become the property of the Society, unless otherwise stipulated for previous to the reading thereof.

4. No Motion relating to the government of the Society, its Bye-laws, the management of its concerns, or the election, appointment or removal of its officers, shall be made at any Ordinary Meeting.

Chap. XIX. *Special Meeting.*

1. Upon the requisition of any six or more Members, presented to the President and Council, a Special General Meeting of the Society shall be convened; a notice thereof shall be sent to every Member whose last known residence shall be in the United Kingdom, at least seven days before such Meeting shall take place; and the nature of any proposition to be submitted to such Meeting shall be stated in such Notice.

2. No vote shall be taken at any Special Meeting unless nine or more Members shall be present.

Chap. XX. *Annual Meeting.*

1. The Annual Meeting of the Society shall be held on the fourth Monday in January of every year.

2. The objects of the Meeting shall be to receive from the Council, and hear read, their Annual Report on the general concerns of the Society; and to choose the Council and Officers for the then ensuing year.

3. The Council for the time being shall annually cause to be prepared two Lists, one of which (No. 1 in the Schedule hereto) shall contain the names of Members whom they shall recommend to be re-elected into, and to be removed from, and of other Members to be elected into the Council; and the other List (No. 2) shall contain the names of such persons as they shall recommend to fill the offices of President, Treasurer, Secretaries and Librarian for the year ensuing; which Lists shall be read at the Ordinary Meeting in January, and shall then be fixed up in the Meeting-room until the day of election. And copies of such Lists shall be transmitted to every Member whose last known residence shall be in London, or within twenty miles thereof, at least seven days before the Annual Meeting shall take place.

4. The President shall appoint two or more Scrutineers from the Members present, not being Members of the Council, to superintend the Ballots and report the results to the Meeting.

5. The Secretaries, assisted by the Treasurer, shall prepare a List of the Members entitled to vote, and each Member voting shall give his name to the Scrutineers to be marked on the said List, and shall then put his ballotting lists into the respective glasses to be provided for such occasion.

6. Any ballotting List containing a greater number of names

proposed for any office than the number to be elected to such office, shall be wholly void, and be rejected by the Scrutineers.

7. The Ballot for the Council shall remain open for one quarter of an hour, at the least; and the Ballot for the Officers for one quarter of an hour, at the least, after the result of the Ballot for the Council shall have been declared.

8. No Ballot shall be taken unless nine or more Members shall be present.

9. If from any cause an election shall not take place of persons to fill the Council, or any of the offices aforesaid, then the election of the Council and Officers, or the election of Officers, as the case may be, shall be adjourned until the next convenient day, of which notice shall be given in like manner as is directed for the Annual Meeting.

Chap. XXI. *Transactions and Journal of Proceedings.*

1. The Transactions shall consist of such Papers communicated to the Meetings of the Society as the Council shall order to be published therein.

2. The Transactions shall be published quarterly, and at such prices as the Council shall direct for each Part or Volume; but the price for one copy of each Part or Volume, to each Member or Subscriber who shall not be in arrear in the payment of his Annual Contribution, shall not exceed three-fourths of the price charged to the public.

3. Authors of Memoirs published in the Transactions shall be allowed twenty-five copies of their communications gratis. If any additional number be required, the entire expense thereof shall be paid for by the Authors.

4. A Journal of Proceedings of the Society shall also be published, containing Abstracts of the Papers read and Notices of other Matters communicated at the Ordinary Meetings of the Society.

5. The Journal of Proceedings shall be ready for delivery to Members and Subscribers within six months after the entry of such Proceedings in the Minute Book has been confirmed, and shall also be bound up and sold with the Transactions.

Chap. XXII. *Alteration of the Bye-Laws.*

Any of the Bye-Laws of the Society may at any time be repealed or altered, or others adopted in lieu thereof, at a Special Meeting

of the Society, to be held after a Notice, given to the President and Council, signed by six Members at least and specifying the intended repeal or alteration, has been read at three Ordinary Meetings of the Society.

THE SCHEDULE REFERRED TO IN CHAPTER XX.

No. 1.

Form of the List for the Council.

List of Members of the present Council recommended to be re-elected at the Election on the day of January, 18 .*

A. B.	
C. D.	
E. F.	
G. H.	
I. J.	
K. L.	
M. N.	
O. P.	
Q. R.	

List of Members of the present Council recommended to be removed.

S. T.	
U. V.	
W. X.	
Y. Z.	

List of Members recommended to be elected into the Council.

Z. A.	
Y. B.	
X. C.	
W. D.	

* If any of the Names in this List be objected to, they must be struck out previous to the Ballot, and other Names may be substituted in the blank spaces left for that purpose.

No. 2.

Form of the List for the Officers.

List of Persons recommended by the present Council to be appointed to the offices of President, Treasurer, Secretaries and Librarian, at the Election on the day of January, 18 .*

President.....V. E.	
Treasurer .....U. F.	
Secretaries ..... { T. G. / S. H.	
Librarian .....R. I.	

* If any of the Names in this List be objected to, they must be struck out previous to the Ballot, and other Names may be substituted in the blank spaces left for that purpose.

London: printed by C. Roworth and Sons, Bell Yard, Temple Bar.

C. Hewitson, del. et lith 1861.

Printed by Hullmandel & Walton.

1. 2. PRONOPHILA PAREPA.
3. 4. PRONOPHILA PHILA.
5. 6. PRONOPHILA PHAEA.
7. 8. PRONOPHILA PERUDA.

W. C. Hewitson, del. et lith. 1861.

Printed by Hullmandel & Walton.

9. 10. PRONOPHILA PLOTINA
11. 12 PRONOPHILA PILAS.
13. 14. PRONOPHILA PEUCESTAS.
15. 16. PRONOPHILA PALLANTIS.

C. Hewitson, del. et lith. 1861

Printed by Hullmandel & Walton

17. PRONOPHILA PHYSCOA.

18. PRONOPHILA PHANIAS.

19. PRONOPHILA POESIA.

20. 21. PRONOPHILA PISONIA.

22. PRONOPHILA PANYASIS.

23. PRONOPHILA PILETHA.

24. PRONOPHILA PRYTANIS.

Hewitson, del et lith. 1861.

Printed by Hullmandel & Walton.

25. PRONOPHILA PAUSIA.
27. PRONOPHILA PANEIS.
28. PRONOPHILA PORINA.
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30. PRONOPHILA PHŒNISSA.
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RONOPHILA CORDILLERA. 34. PRONOPHILA PORSENNA.
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Hewitson, del. et lith. 1861. Printed by Hullmandel & Walton.

37. PRONOPHILA PHASELIS.
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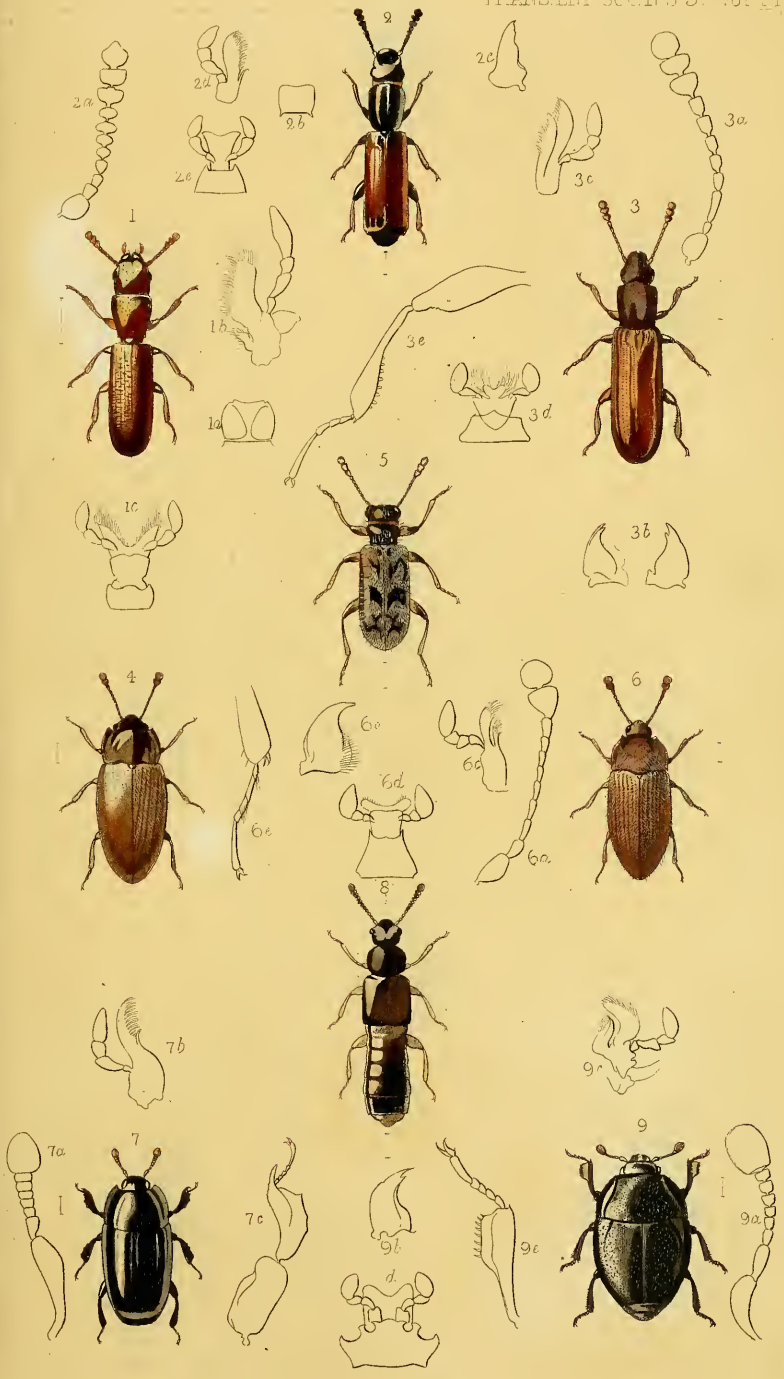
40. 41. PRONOPHILA PATROBAS.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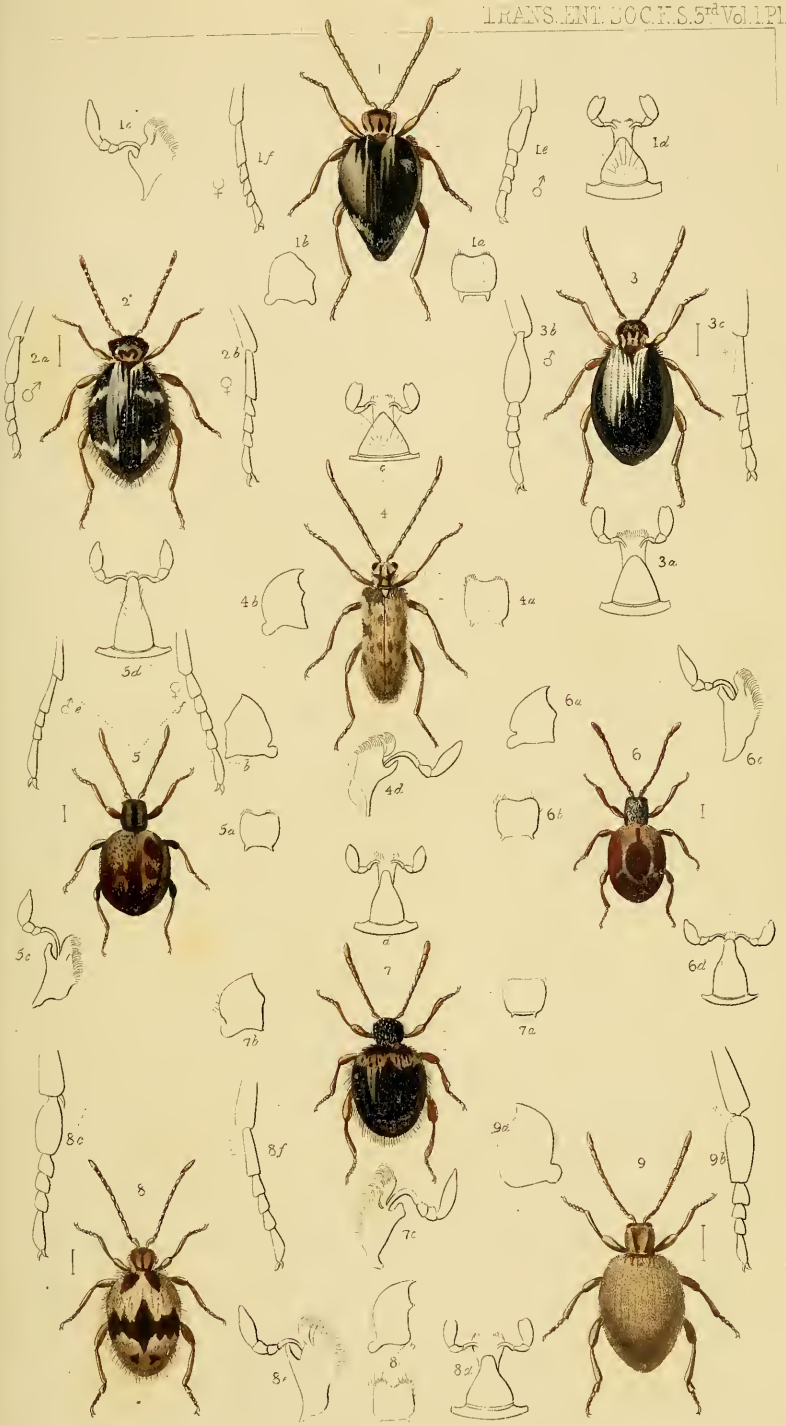

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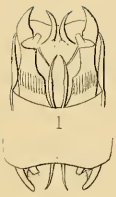
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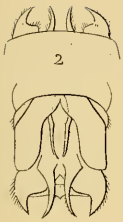
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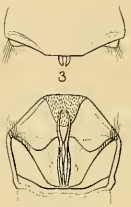
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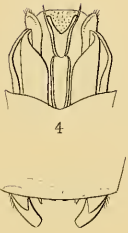
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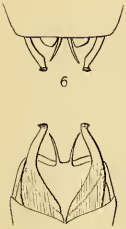
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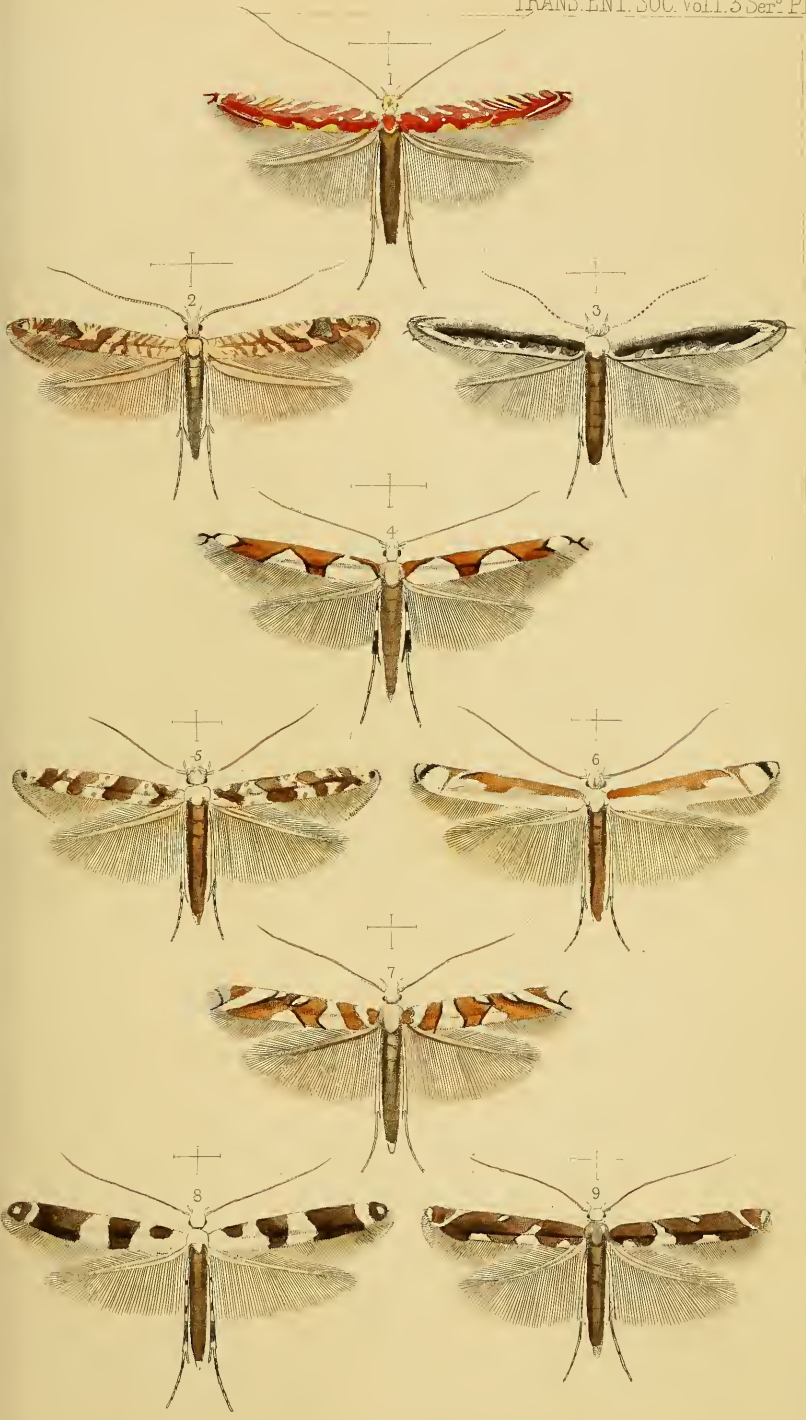
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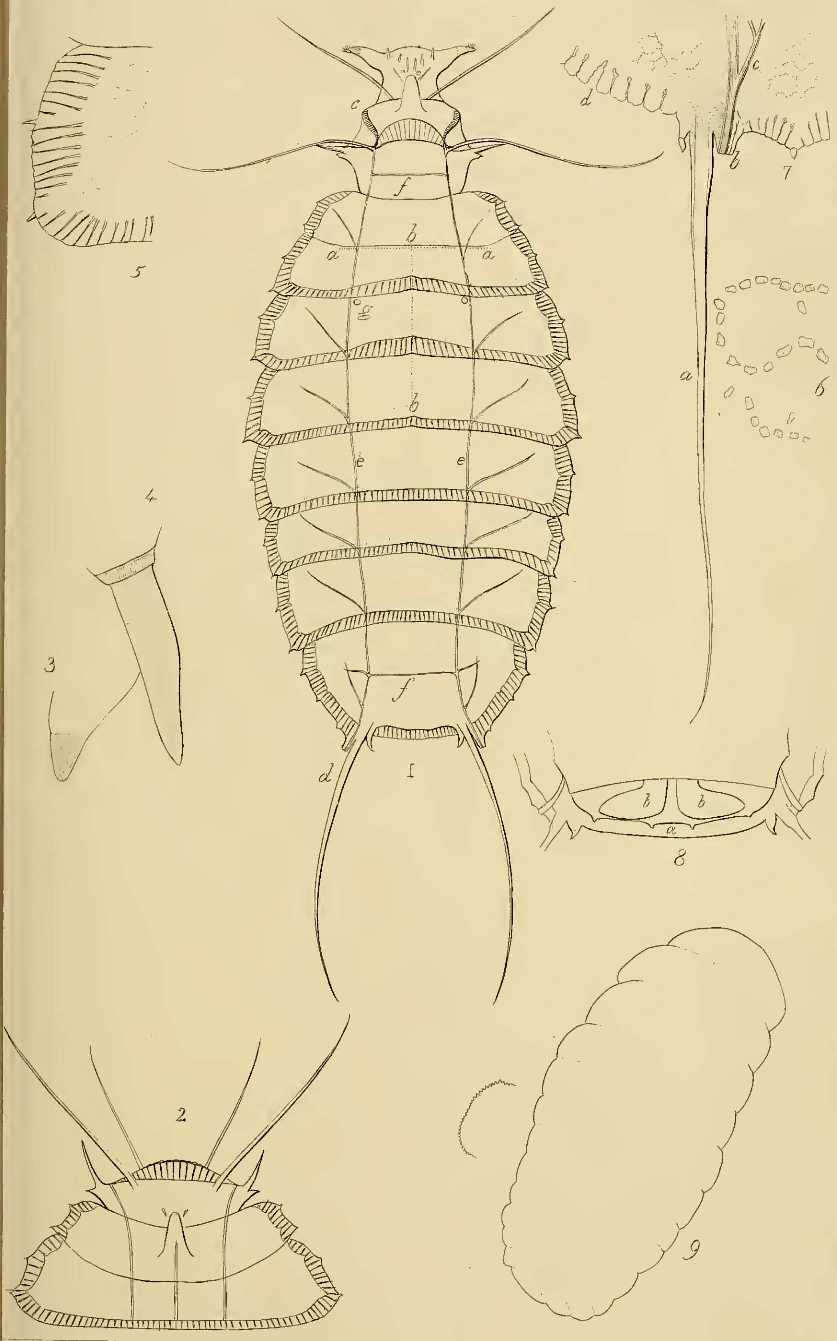

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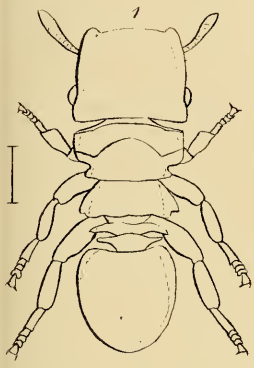
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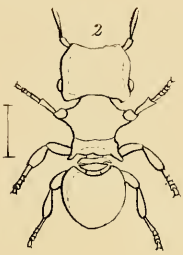
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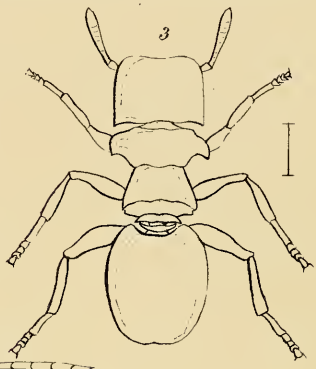
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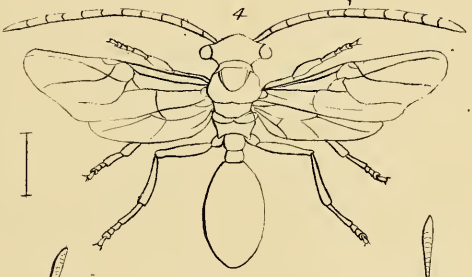
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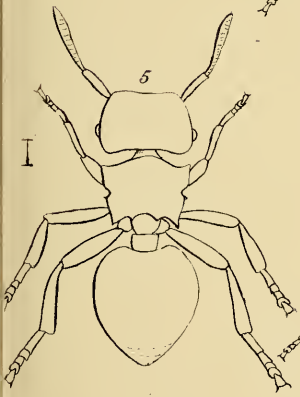
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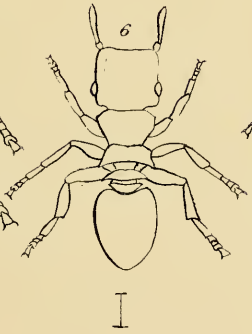
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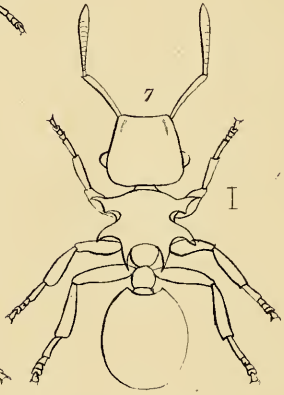
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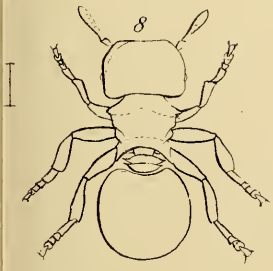
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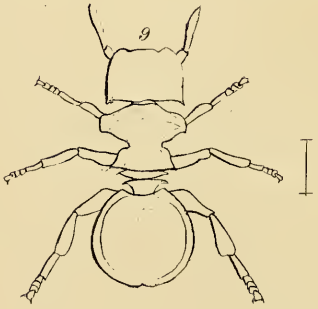
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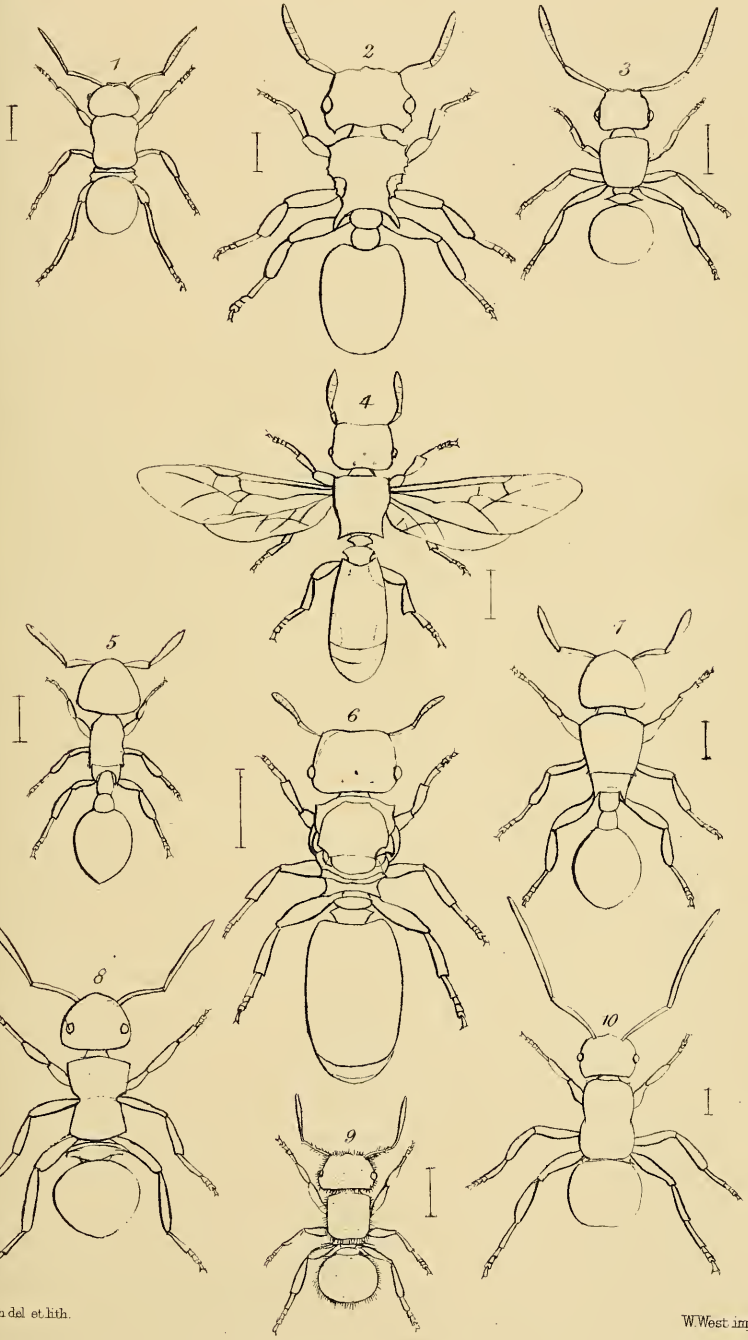

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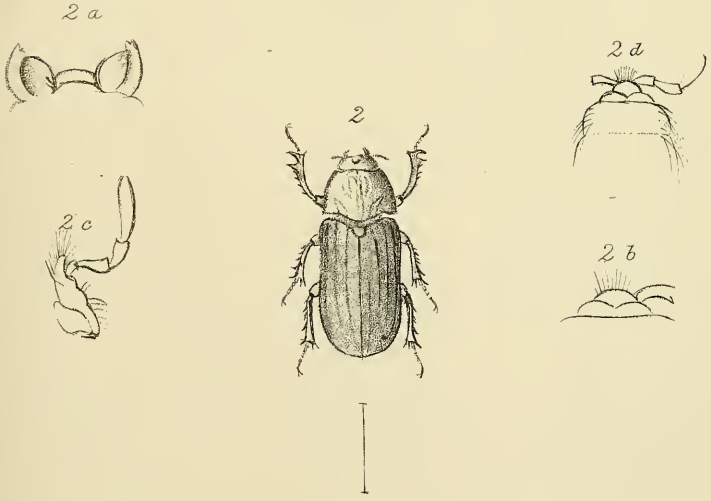
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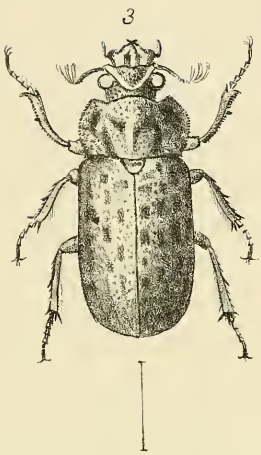
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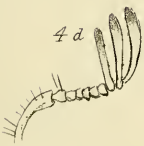
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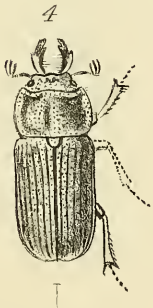
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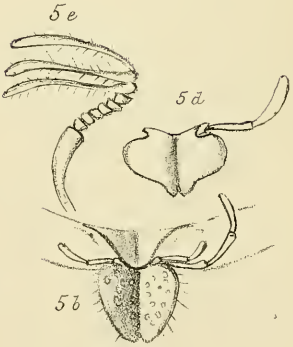
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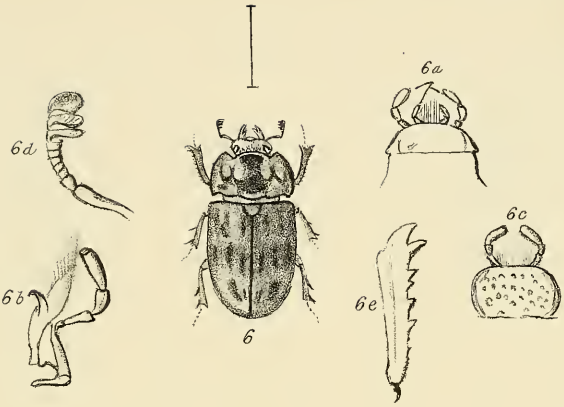
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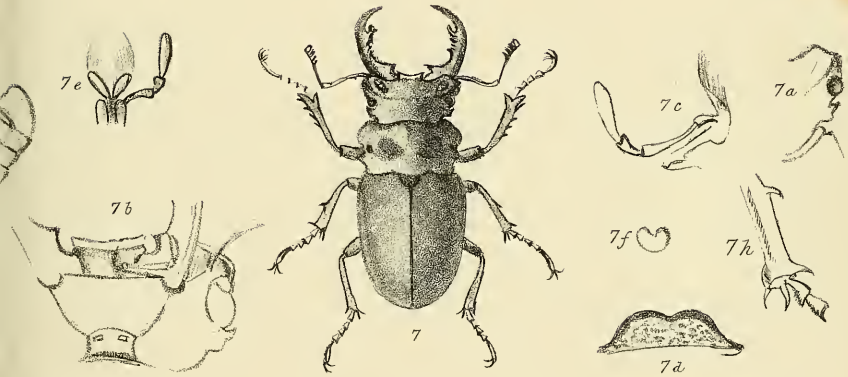
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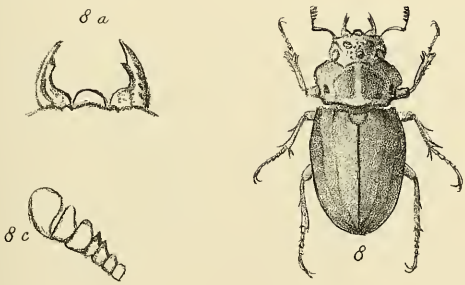
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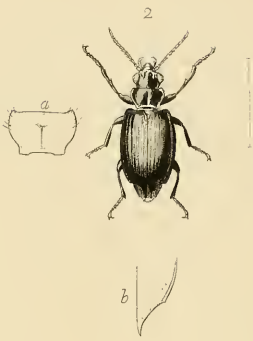
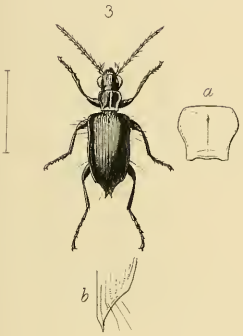
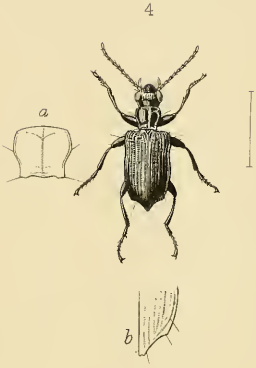
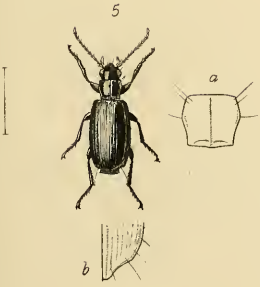
8b

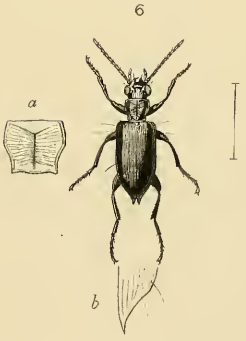
E.W. Robinson, Del. et Sc. 1863.



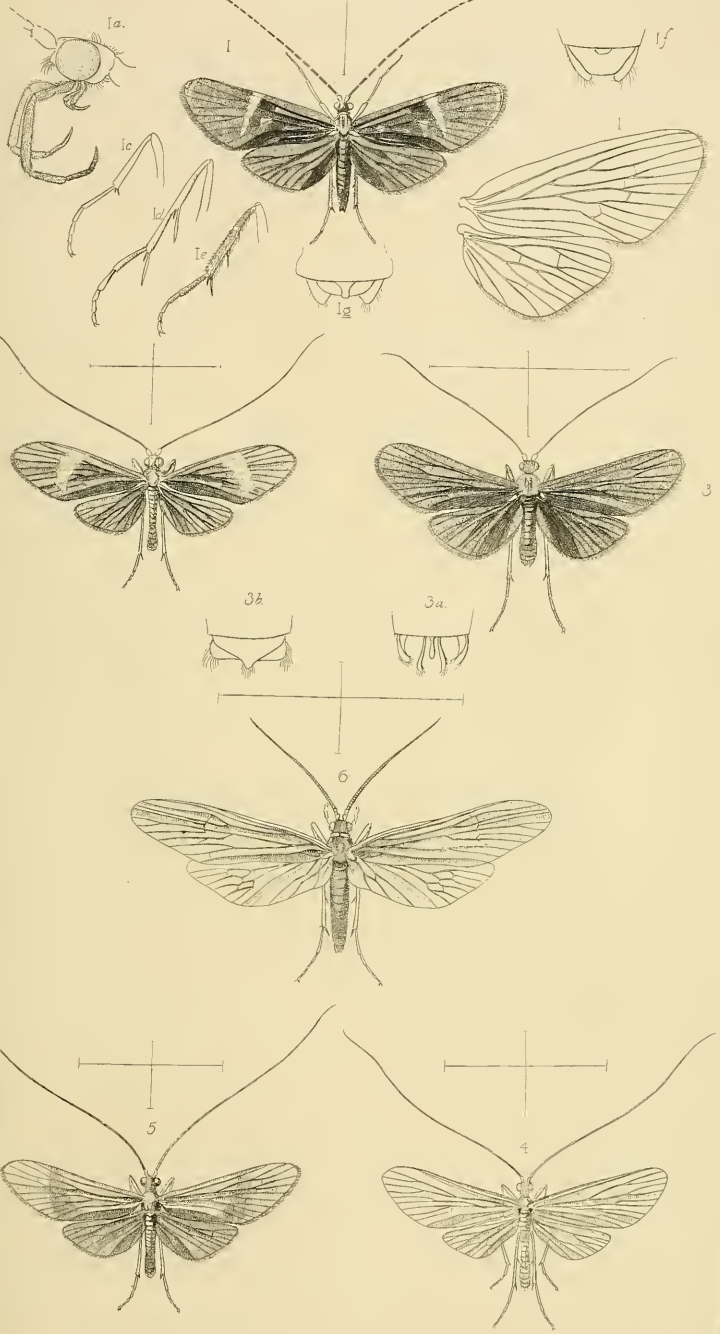








E.W. Robinson, Del. et. Sc. 1863.



E.W.Robinson.Del et Sc.1863.

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6, f.

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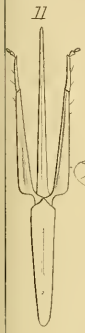
6, a.

6, b.

6, d.

2

6, c.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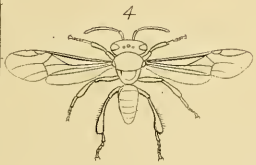
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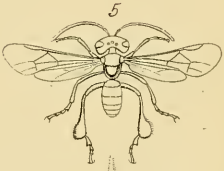
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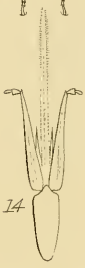
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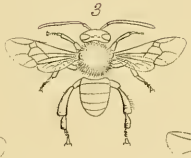
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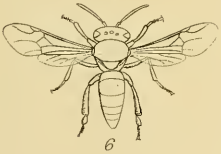
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10

Drawn & Etched by F. Smith.

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2c
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3b
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2b
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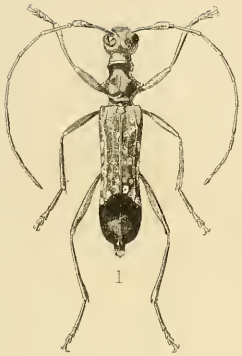

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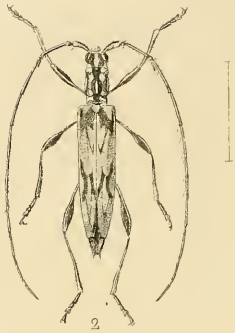

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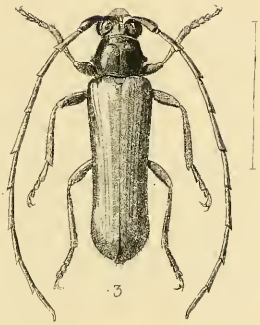

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E.W. Robinson. Del. et Sc. 1863.

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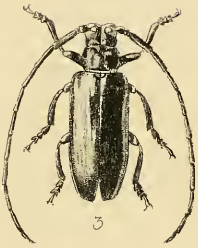

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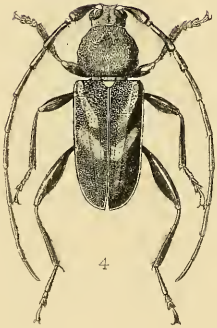

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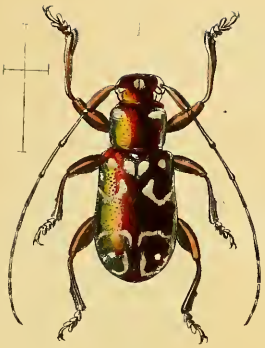
J. W. Robinson Del^t et Sc^p 1863.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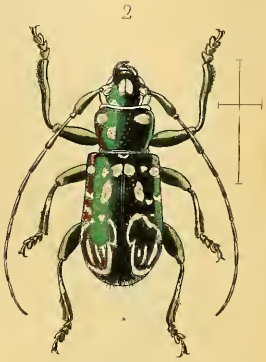
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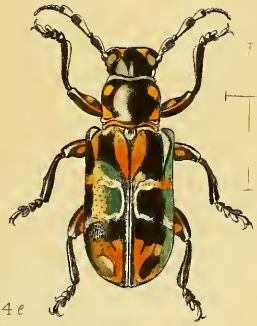
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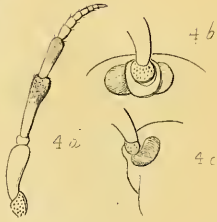
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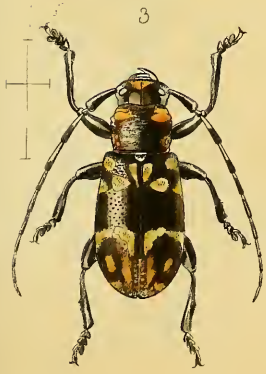
4a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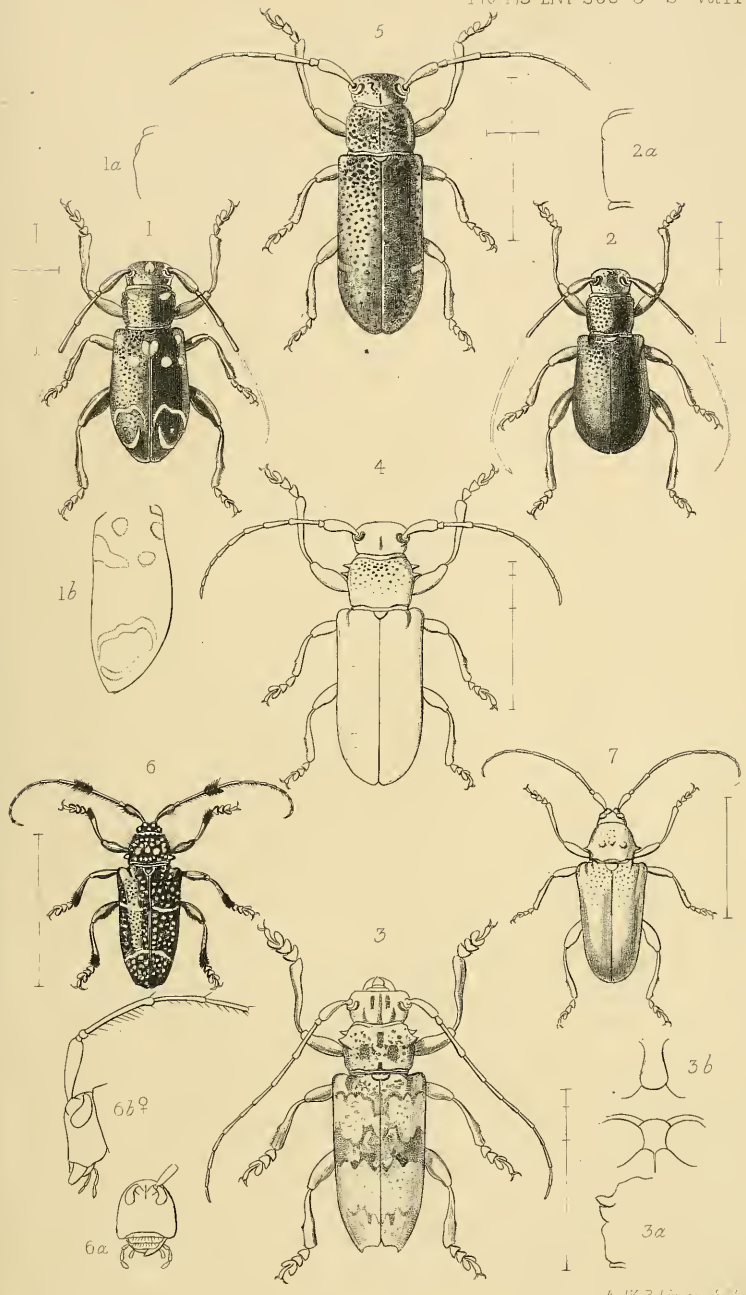

J.G. Westwood, Delt

E.W. Robinson Sculpt

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